

Dairy Firm-Farmer Relationship

A Case Study of Nyanza Dairy, Rwanda



A Research Project submitted to Van Hall Larenstein University of Applied Sciences In Partial Fulfillment of the Requirements for the Degree of Master in Management of Development, Specialization in Rural Development and Food Security

By

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Dedication

To my late father who would have been happy to see his son's achievements, to all my family members and friends who left us early, to my lovely mother, brothers and sisters and to all my good friends.

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List of abbreviations

BRD:	Bank Rwandaise de Développement
CDI:	Centre for Development Innovation
EADD:	According to East African Dairy Development
EDPRS:	Economic Development and Poverty Reduction Strategies
FAO:	Food and Agriculture Organization
GoR:	Government of Rwanda
ICA:	International Cooperative Agency
IDP:	Integrated Development Program
ISAR:	Institut des Sciences Agronomiques du Rwanda
KIT:	Koninklijk Institute voor de Tropen (Royal Tropical Institute)
MCC:	Milk Collection Center
MINAGRI:	Ministry of Agriculture and Animal Resources
NISR:	National Institute of Statistics of Rwanda
PADEBL:	Project d'Appui au Développement Bovin Laitier
RARDA:	Rwanda Animal Resources Development Authority
RBS:	Rwanda Bureau of Standardization
RCA:	Rwanda Cooperative Agency

Abstract

The dairy sector in Rwanda is still under development, the same applies to other agricultural activities. Currently the whole country has only 3 dairy plants, Inyange dairy, Nyanza dairy and Rubirizi dairy. The country counts 61 operating milk collection centers. Nyanza dairy is located in the southern province in Nyanza district and collects milk from both Nyanza and Ruhango districts. The dairy has been in existence since 1937 and its current status is dominated by old facilities, buildings and machinery.

This report is a result of a study made to assess business relationships between Nyanza dairy and farmers and to test the applicability of the 2-2 Tango tool. The dairy works with four cooperatives but this study focused on two of them: Gwizumukamo located in Busoro sector and Turengeraborozi from Kirengere Buhanda. To achieve the study's objective 2-2 Tango research tool was used. This is a participatory tool which is based on the scoring of same statements. Three people were interviewed from the dairy, four from farmer's cooperative and two milk collectors to get an over view of the current relationship. After this, statements were formulated, twenty four farmers and three staff of the dairy participated in the scoring.

Business relations between farmers and the Nyanza dairy are based on milk supply agreements. Between cooperatives and individual farmers who are able to supply milk to the dairy. The study revealed that there are some challenges on both sides mainly the need for innovation and extension for the dairy; low milk production, poor milk quality, lack of artificial inseminations, low prices for farmers and late payments. It showed that the relationship is to some extent not very good with an average score of 56.8 percent for Nyanza Dairy-Busoro farmers and 57.1 percent for Nyanza Dairy-Buhanda farmers. It was also noticed that there is a good will on both sides to work towards a good business relationship for a betterment of the milk business.

The 2-2 Tango tool proved to be a good assessment tool especially by its simplicity in data collection (Scoring) and processing. However some minor difficulties were encountered. With regards to the study, there was reluctance from farmers to avail themselves for the research and differentiation between the researcher and the dairy which might have biased their answers. With regard to the tool, there were difficulties to formulate statements that can be easily answered by both sides, and it was realized that there is a need for a scoring trial before the scoring process.

1. INTRODUCTION

The drive of this research comes from two main reasons. Firstly it is done as a thesis for the partial fulfilment of the requirements for Master's degree in Management of Development with a specialisation in Rural Development and Food Security at Van Hall Larestein University of Applied Sciences, part of Wageningen. Secondly, it is a study for the CDI for the development of the new research tool known as "2-2 Tango research tool" The aim of the research is to assess the relationship between farmers and companies that process their agricultural products, a case study of Nyanza dairy and dairy farmers.

1.1. Back ground of the study

Rwanda is located in the great lakes region of central Africa, 1200 km away from the Indian Ocean and 2000 km from the Atlantic Ocean, bordered by Burundi, Tanzania, Uganda and Democratic Republic of Congo. With the population of about 10.7 million on an area of 26,338 square kilometers, it becomes the highest densely populated country in Africa. About 406 people per square kilometer. Rwanda is known as a one thousand hills country, due to its natural topography where about 80% of the total land is hilly and mountainous. (NISR, 2010)

The altitude ranges between 900 m and 4.507 m (Twagiramungu, 2006). Nyanza district is located in the Southern province of Rwanda with 671, 2 km², and 88 Kilometers away from Kigali the capital city of Rwanda. It has a population of around 225.209 and is believed to be the second largest in cattle population after Nyagatare district. Nyanza district has an estimation of 17% of cattle and is the second after Nyagatare District. (MINAGRI, 2009)

Milk sector in Rwanda

Policy

Cattle have an important role economically and culturally in Rwanda. In 2006, a survey indicated that the number of cattle amounted to 1, 2 million. This number has been considerably increasing as the Government of Rwanda (GoR) has been investing more in animal cattle. (Technoserve, 2008) Through the project one cow per poor household the GoR planned to distribute milking cows to 257,000 households by the end of 2017. The main aims of this project are to fight poverty by increasing milk production and crop production through the use of manure.

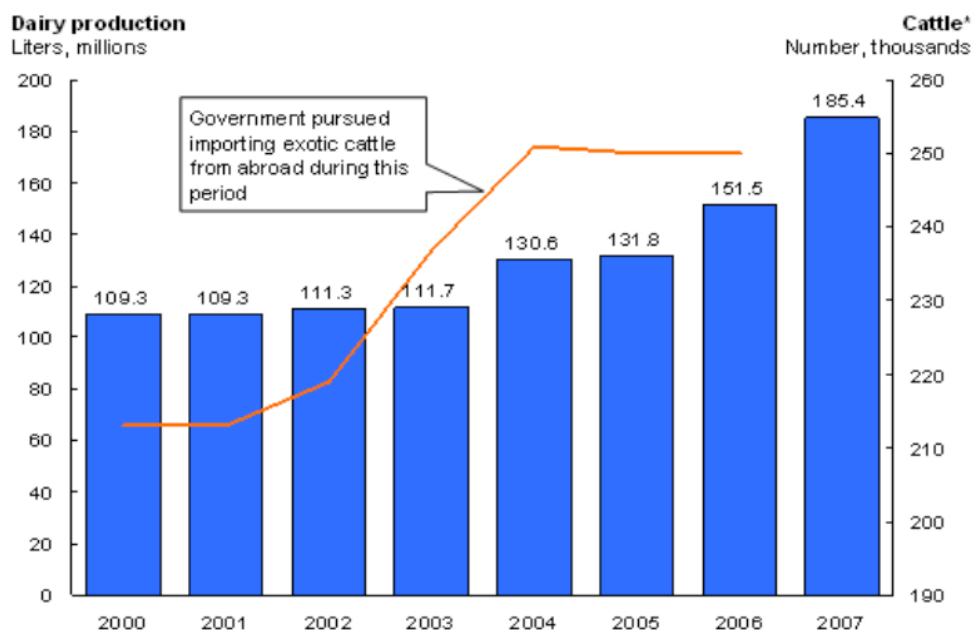


Figure 1.1.1: Cattle and dairy production

Milk products have had an important place in the Rwandan society since ancient times. Milk has been consumed at the household level or exchanged within families. The majority of consumers prefer the traditionally fermented milk locally known as *ikivuguto*¹ to the processed milk which is also cheaper than processed milk (Olok, 2001). The importance of milk has been limited to consumption but not for trading. We can justify this by the fact that the main purpose of having cows in Rwanda has been for manure, meat and mostly for social functions and social status.

According to FAO (2011) by the end of 2011, the total milk production was estimated to 401.000 tons. Technoserve (2008) estimates that out of the total production, 5% is collected through milk collection centers. The main reason for this is that milk collection centers are not in every corner of the country and those that are available, the distance from farmers to MCCs is still a barrier. The other reason, as mentioned in the paragraph above, due to consumer's preferences, a large quantity of milk does not need to be modernly processed. Almost everyone in Rwanda can ferment milk. Despite a considerable increase in milk production, Rwanda is among the lowest milk-producing countries in the world, with mere 3.2 litres produced per cow per day compared to 36 litres in the United States. Of the 1.2 million cattle in the country, 13.6 per cent produce milk (Technoserve, 2008). The country still imports important quantity of dairy products in order to meet the internal demand but as shown in the table below, imports have been decreasing considerably.

¹ Ikivuguto is the local name of the fermented milk. This is the type of milk that most of Rwandans consume as it is easily produced by using simple techniques.

Table 1.1.1: Dairy product importation and production

Year	Production/Tons	Importation/Tons
1999	55,577	1,280
2000	57,853	1,378
2001	63,484	1,687
2002	98,981	1,378
2003	112,463	720
2004	127,417	645
2005	133,612	500
2006	152,511	500
2007	158,764	450

Source: Rutamu, 2007

Dairy processing

Currently the country has three dairy plants. Nyanza Dairy formally known as Nyabisindu dairy is the oldest as it started in 1937. Others are Rubirizi and Inyange .Milk production has been increasing drastically due to the “Girinka program (One cow per poor family) project“, crossbreeding and introduction of exotic cows. This project was inspired by the Rwandan culture and initiated in 2006. The program is considered part of the 2020 vision, Economic Development and Poverty Reduction Strategies (EDPRS) and Integrated Development Program (IDP) implementation measures. This program aims at enabling every poor household to own and manage an improved dairy cow which would help the family to better their livelihood through increased milk and meat production and to improve soil fertility of their land for their crops using the available manure. By the end of 2007, Nyanza district had received 610 improved milk cows. For the last ten years, the Government of Rwanda has invested more money in the dairy sector, like the construction of 50 new milk collection centers, implemented several policies that are expected to boost both the quantity and quality of milk but still the journey to success is too long. Through its vision 2020, the main target is modernization. One of the pillars of the vision is the transformation from subsistence to a productive, high value, market-oriented Agriculture that has an impact on other economic activities (Butera & Rutagengwa 2004).

Table 1.1.2: Performance of existing milk processing units in Rwanda (2007)

Dairy Plant	Installed Capacity (L/day)	Processed milk (L/D)	Products Produced	% to Installed capacity
Nyabisindu Dairy (Nyanza District)	15,000	3,000	Cultured drinking yoghurt Flavoured Yoghurt	20%
Inyange Industries (Kicukiro –Kigali)	100,000	2,000	Pasteurised milk, flavoured yoghurt	2%
UDAMACO	40,000	Not yet Started	-	0%
Ruyenzi -	25,000	Not yet started	-	0%
Dan- Cheese Gishwati	5000	3000	Hard Cheese	60%
Rubirizi dairy Kicukiro- Kigali	8000	1200	Pasteurised milk Cultured drinking yoghurt	15%

Source: Rutamu, 2007

Nyanza Dairy (formerly known as Nyabisindu) is the main actor in the milk sector in Nyanza district. Part of the processed milk, around 30%, comes from Songa farm, a farm owned by the dairy and the other part is collected from four cooperatives, Giramata, Jyambere, Twiyorore and Gwizumukamo, and the other is collected from different individual farmers in the area.

Due to several factors such as the lack of infrastructure, low investments, and the topography; and due to the fact that milk is highly perishable, post-harvest milk loss is a major constraint affecting the efficiency of milk production in Rwanda. According to Staal (1996) raw milk is highly perishable, and thus requires rapid transportation to consumption centers or for processing into less perishable forms. In 2007, the milk and milk product imports were 450 tons. The modernization policy encouraged by the Government of Rwanda is good to some extent as it adds value to milk production. The success of such initiative may not be in the near future while milk production has been increasing considerably and there might be a risk of it contributing to milk industry destruction rather than its development because it tends to ignore local market needs and preferences. Farmers may lose interest to continue investing in milk production if the future does not promise tangible profits. There is a need to insure that the farmer gets good market for his produce and the best way would be to encourage local consumption. To access the local market, there is a need to assess what the local consumer needs and what are the possible, cheap and sustainable ways of processing for the local market accordingly.

1.2 Problem statement

Despite several efforts by the Government of Rwanda to support the milk sector, dilemmas still remain many. According to East African Dairy Development (EADD, n.d.), around 5% of the total milk produce is collected through milk collection centers. Processing units are significantly not performing at their capacity, milk demand is high and the country has to import milk and milk products in order to cover the gap. Today, nutrition and food security are one of the challenges the Government of Rwanda is trying to fight. Milk is considered to be one of the solutions, thanks to its nutritive value and can also be a source of money to poor farmers. There are

several factors that lead to the malfunctioning of the dairy sector in Nyanza district, but there are still possibilities to identify those constraints and find sustainable solutions if farmers work hand in hand with Nyanza dairy. Dairy sector depends on several factors and this makes its study a bit complex. Further researches on the Nyanza dairy have been done but no specific interest was given to the relation between farmers and processors.

1.3 Research objective

The objective of this research is to assess firm-farmers relationship, between Nyanza dairy and farmers in order to strengthen the milk value chain.

1.4 Main research questions

- 1. What is the current form of Nyanza Dairy business cluster?**
 - 1.1. Who are actors in the milk value chain?
 - 1.2. What are the services to farmers who supply milk to Nyanza Dairy?
 - 1.3. What is the share distribution of costs and benefits?
 - 1.4. What are alternative market channels for farmers?
- 2. What is the relationship between farmers and Nyanza Dairy?**
 - 2.1. What is the power relationship between the Dairy and farmers?
 - 2.2. What is the perception of farmers towards services offered by the Dairy?
 - 2.3. What is the value of their membership to the business cluster?
- 3. What is the contribution of milk production to food security?**
 - 3.1. What is the contribution of milk to food availability?
 - 3.2. What is the contribution of milk production to income generation?
 - 3.3. How does milk affect food stability?

2. CONCEPTUAL FRAMEWORK

2.1. Introduction

In this chapter we will deal with the conceptual framework and information related to dairy sector. To have a broad overview we will first look at it on the East African level then on the national level and finally in Nyanza district. In this literature study we will also study the contribution of dairy sector to food security, and at the end of this study we shall be able to also look at the relationship between farmers and other actors.

2.2. Milk value chain analysis

To understand how a business or firm operates, the value chain is one of the effective tools to use. Porter (1985) defined a value chain as a sequential set of primary and support activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use. It serves as a tool to firms to master internal and external process, hence improving the efficiency and effectiveness. Like many other agricultural products the chain is quite complex. The dairy value chain starts with the raw product/milk supply at the farm level and ends with consumers who make the choice to buy, or not to buy, the finished product. The dairy value chain has several links between the farm and the consumer: procurement, transportation, processing, commodity storage, conversion packaging, distribution, retailing, and food services. According to Rukazambuga (2008) the dairy marketing system in Rwanda, is composed of two main marketing systems. Raw milk which is traded through milk hawkers to either final consumers or retailers, and the processed milk by small and large scale processing units mostly to high income consumers. (Gorton, White et al. 2007)

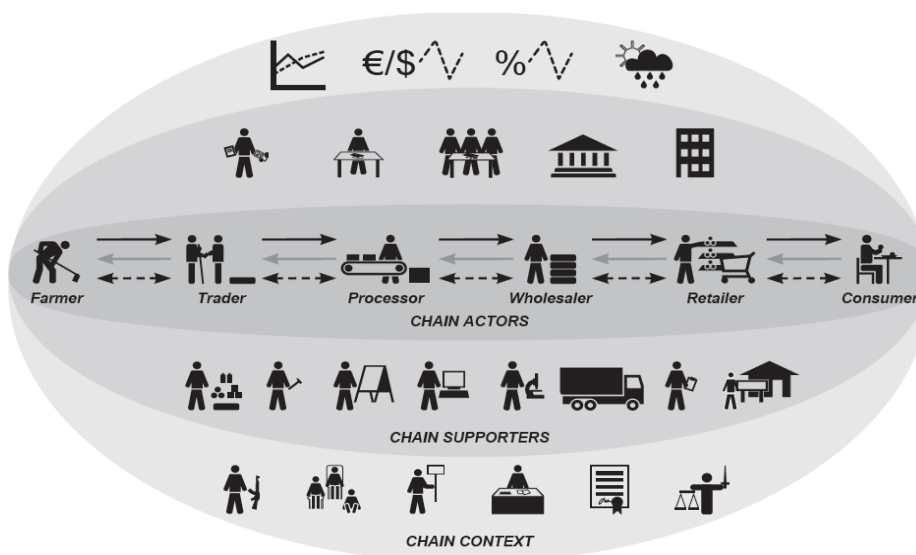


Figure 2.2.1: Value chain structure

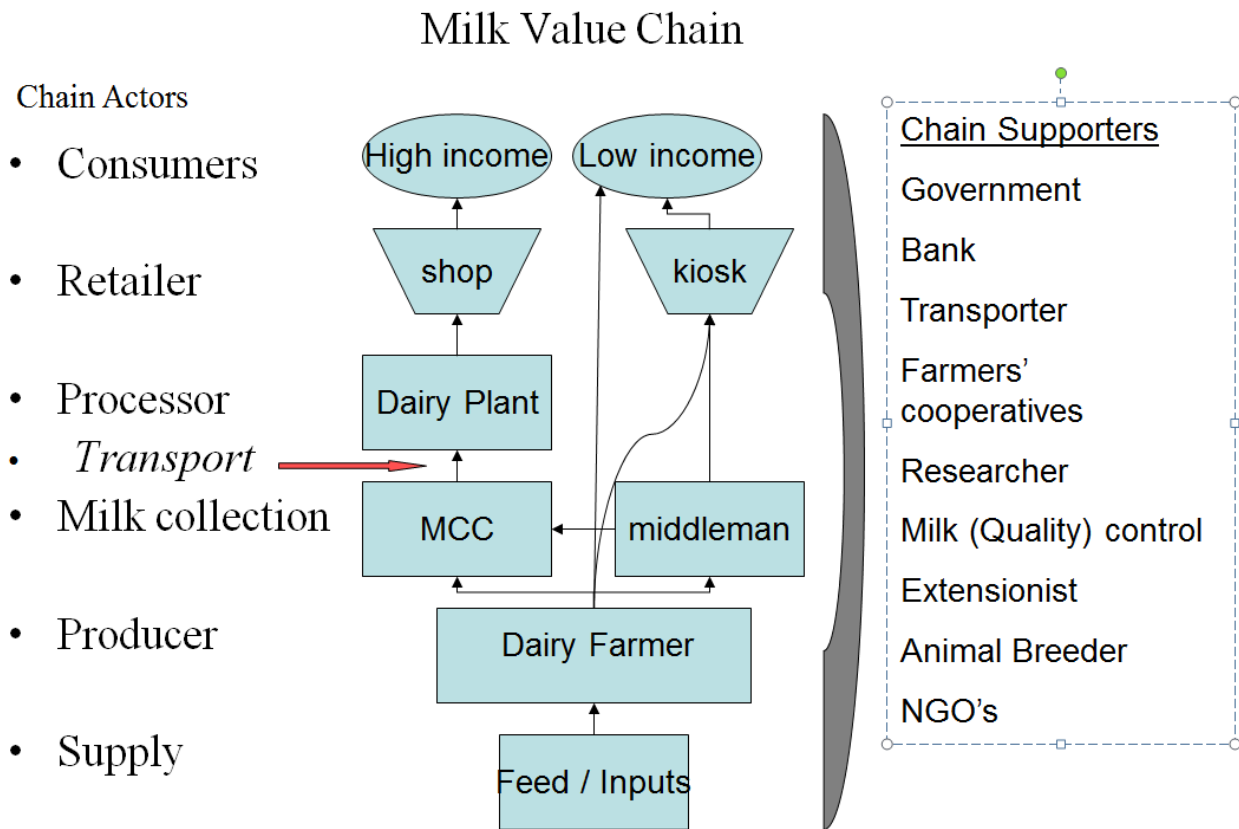


Figure 2.2.2: Value chain map

2.2.1. In put suppliers

Livestock production in Nyanza as well as in other districts of Rwanda has, for long, remained traditional with limited market-orientation and poor investments. Producing for the market requires re-orientation of the production system and development of a knowledge based and responsive institutional support services. The majority of cattle is made of indigenous breeds and sometimes crossbreeds of local breeds and exotic cattle. In order to improve the milk production the district is encouraging farmers to do artificial inseminations.

For farmers to buy feeds in order to increase milk production, it is expensive as presently there are no factories for animal feeds, and they prefer to feed animals with local forage.

2.2.2. Producers

Milk production in Nyanza district is largely from smallholder farmers. Due to improvement of indigenous breeds and introduction of exotic cows the production has been increasing significantly during the last five years. Farmers are individuals who own one to three cows. It is estimated that Nyanza district only produces around 28 million liters per years. At this level, all the milk is sold without any value addition.

2.2.3. Traders and Transporters

Nyanza dairy plant is the only milk processor in the area. It produces fermented milk and yoghurt. From the farms, milk is collected by milk collectors through milk collection centers which deliver it in bulk to the dairy. A number of milk kiosks are found along the high way of Kigali-Huye and they all sell a considerable quantity of milk.

Nyanza District is crossed by the main road to Kigali the capital city. The city centers near the road have been developing thanks to milk trading. It has been a culture that any car passing by has to stop for ten to 15 minutes to allow passengers to buy milk. A small plastic container of 4 litres cost around 1200-1500 Frw. People believe that “amata y’i Nyanza” to mean milk from Nyanza is of good quality and of course it is much cheaper. There are always conflicts between milk collection centres and middle men because middle men pay much higher than MCC.

From farms to milk collection centres or to shops, milk is transported in metal cans on bicycles. All milk collectors who bring milk to MCC use metallic cans. Plastic jerry cans are forbidden as they are significantly associated with poor hygiene (Omore, 2005). This is believed to be one of the major causes of milk loss as transporters have to cover long distances under the sun. This activity is exclusively done by men. Middle men supply fresh milk to MMCs and MCCs only cool it while waiting to deliver it, to either the processing plant or to shops.

2.2.4. Main milk sellers

There are several categories of milk sellers. Milk selling process starts with farmers who sell to milk collectors or to direct consumers. After collection MCCs sell it to Nyanza dairy plant or to local restaurants and kiosks. Most MCCs have been built under the assistance of the Government of Rwanda, the Rwanda Development bank and the African Development Bank. MCCs belong to cooperatives and cooperatives are owned and controlled by men and women with equal rights. Nyanza dairy plant also sells its processed products to supermarkets, in the capital city and other town cities in the country. Hadgi enterprise is another main milk seller in the area and its specialization is the curd milk. Shops near the main roads are the main sellers of milk produced in Nyanza District. It is not easy to estimate the amount of milk sold at this level.

2.2.5. Consumers

Consumers of Nyanza milk are scattered all over the country and outside the country. The first category is of those who buy fermented milk from different shops. This category is made of people of mild and high income. The fermented milk is mostly packed in four litre’s plastic container and it is much cheaper. A litre costs around 400 Frw while a litre from the milk plant costs between 800-1000 Frw. The processed milk, packed in 1 or ½ litre from Nyanza dairy is also available in different supermarkets and this is generally consumed by high income consumers as it is expensive and mostly found in supermarkets and shops. Nyanza dairy plant produces yoghurt. This product is considered as an exotic product.

2.2.6. Supporters

Dairy value chain supporters are mainly made of the Government and development NGOs. Below are some of the most involved institutions and their roles, and in what way they support farmers.

RARDA: Rwanda Animal Resources Development Authority. This is a department under the Ministry of Agriculture whose its main mandate is to implement the National Animal Resources Policy, to provide improved technology and extension services to farmers and other individuals dealing with products of animal origin, in order to help them modernize their operations so as to increase marketing of products and raise their incomes, and many other activities that aim to maximize the animal production capacity of Rwandan farmers.

MINAGRI: The ministry in charge of agriculture is the overseer of the Government to all activities related to agriculture and livestock. Its actions go from input supply to the last consumer as it somehow influences prices through price regulations.

BRD: Bank Rwandaise de Développement. This is the main financial resource for all big projects in agriculture. All milk collection centres in Nyanza district have benefited from its support.

RBS: Rwanda Bureau of Standardization. The RBS plays its role in quality control of feeds, equipment, processing processes and selling of the last products. In addition to setting up standards, it also trains different stakeholders.

2.3. Firm-farmer relationships

2.3.1. Farmer groups

Farmers and all other actors need to understand that the success of one will be the success of the other one. According to KIT, 2008 empowerment of producers cannot be addressed without taking into account their relationship with other chain actors. They further highlight that empowerment is a process that impacts on various social structures and personal relationships. Every product follows a defined chain which most of the times, starts from the farmer and always ends with the last consumer, and this means that the disappointment or satisfaction of one of the chain actor will affect the whole chain. The benefits of all actors who collaborate are explained by the KIT. Actors in the chain who work well together and trust each other can become partners and engage in dialogue with the Government to create more supportive policies and actions on such key issues as taxation, research support and infrastructure. (KIT & IIRR, 2008)

2.3.2. Farmers cooperatives in Rwanda

Co-operatives are businesses owned and run by and for their members. Whether the members are the customers, employees or residents they have an equal say in what the business does and a share in the profits.(ICA, 2012). Watkins, 1986 defines a cooperative as an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise. Based

on the definition above, one may argue that what are the real values of cooperatives in Rwanda or how do farmers value and perceive their associations into cooperatives? To a great extent any perception that does not go in line with the definition is the result of how they were initially introduced in Rwanda. After independence, the Government used cooperatives as instruments of implementation of its policies and plans, thus becoming a tool for politicians. This attitude led to misconception of the notion of “cooperative “with “Associations” (RCA, 2006). In addition to the false foundation, cooperatives in Rwanda are also endangered by dependency culture. The RCA, 2006 recognizes that in addition, to the foregoing negative effects on the cooperative movement the State and development agencies including donors introduced the culture of dependency by conditioning external assistance to the formation of cooperatives and other forms of associations. Thus, members look at cooperative as a means of only getting financial assistance from donors rather than as an economically productive enterprise. Farmer’s cooperatives which are the focus of this research do not escape from this trail.

There are several types of cooperative. According to the Rwanda Cooperative Agency (RCA, 2006) the most common in Rwanda are savings and credit cooperatives, banking cooperatives, agricultural cooperatives, small processing and marketing cooperatives, fishery cooperatives, Consumers, workers, handicraft and artisanal cooperatives. Potential for other activities are many.

The Government is convinced that cooperatives among other social benefits would contribute to the achievement of its Vision 2020 (RCA, 2006). A lot of efforts have been made to change people’s mindset about cooperatives, so that they can consider them as businesses.

2.3.3. Aspects of Relationship between farmers and firms

The farmers and companies in agriculture are linked by different aspects. In this section, I will discuss some of aspects which are prevalent between Nyanza dairy and dairy farmers.

Trust and support

Aspects of firm-farm relationship evolve around the milk market and supply. Milk market and supply is also linked to many other factors and in their studies, Dries et al. (2007) explained that the satisfaction of famers with their main buyers is significantly based on the trust and support measure. (Gorton and White, 2007) cited in Dies et al. (2007) argues that support to farmers stimulates yield increases and improves the quality.

Organization

Working with small scale farmers would be difficult if farmers are not organized in groups. But organization does not only mean being in a group of farmers but also the whole functioning of such organization. In their paper, (Bill, Lundy, MacGregor, 2007) revealed that one of the biggest challenges to large business working with small scale farmers is to get them organized. Getting farmers organized reduces transaction costs and facilitates communication.

Contracts and agreements

Contract farming is defined as a form of 'vertical coordination' by agribusinesses as well as a sourcing mechanism that lies between spot market purchases and production at owned

or rented land ('vertical integration') (CEPAL/GTZ/FAO 1998,) in (Echánove and Steffen 2005). In his work, (Barry, Sonka et al. 1992) discusses that contracts in agriculture are generally incomplete. This is in most cases due to many uncertainties in agriculture. Contract farming is expected to bring benefits to farmers. However, as argued by (Glover and Kusterer, 1990; Little and Watts, 1994) cited in (Key and Runsten 1999), contract farming in African context has been observed to disrupt power relations and to increase tensions within households.

2.4. Dairy farming and food security

Livestock production constitutes a very important component of the agricultural economy of developing countries, a contribution that goes beyond direct food production to include multipurpose uses, such as skins, fibre, fertilizer and fuel, as well as capital accumulation. Furthermore, livestock are closely linked to the social and cultural lives of several million resource-poor farmers for whom animal ownership ensures varying degrees of sustainable farming and economic stability (FAO, 1995). This situation applies also to the Rwandan case in all its aspects.

Before I talk about the link between food security and the dairy industry, let's first talk about food security itself. Today, there is no single definition of food security. FAO, 2006 acknowledged four dimensions as the main point to look at when thinking about food security. Those dimensions are:

- **Food availability:** The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports, including food aid.
- **Food access:** Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources).
- **Utilization:** Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security.
- **Stability:** To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access dimensions of food security.

3. RESEARCH METHODOLOGY

This chapter discusses the process used to carry out the research. It discusses the type of the research, the data collection, data processing, data analysis and study limitations.

3.1. Type of research

This research is a case study; assessing firm-farmers relationship, between Nyanza dairy and farmers who supply milk to the dairy. Dairy sector depends on several factors and this makes its study a bit complex. A number of researches have been carried out and focused on several issues in the dairy sector. However, not enough research has been done on the relation between farmers and processors. This research is based on the idea that good relationships between farmers and processors would help everyone in the milk industry to understand what it takes and needs to both succeed at the same time.

3.2. Research area

Data was collected from Nyanza dairy and farmers that do supply milk to the dairy. My choice of Nyanza dairy was motivated by the importance of milk production in this region. Nyanza dairy is located in Nyanza district but farmers come from mainly Nyanza and other neighboring districts. Nyanza is the second largest region in the country in milk production after Umutara. The background and the problem statement described the overview of fundamental issues in the dairy sector in Nyanza district. However, in order to gain more insight, a deep research to understand relationships between farmers and processors was necessary. This section, explains which methods; I judged suitable to achieve our targets.

A desk study of preliminary data and basic knowledge will be done using books, scientific journals, and articles. In addition to that, unpublished reports from different authors and other projects and research will be used.

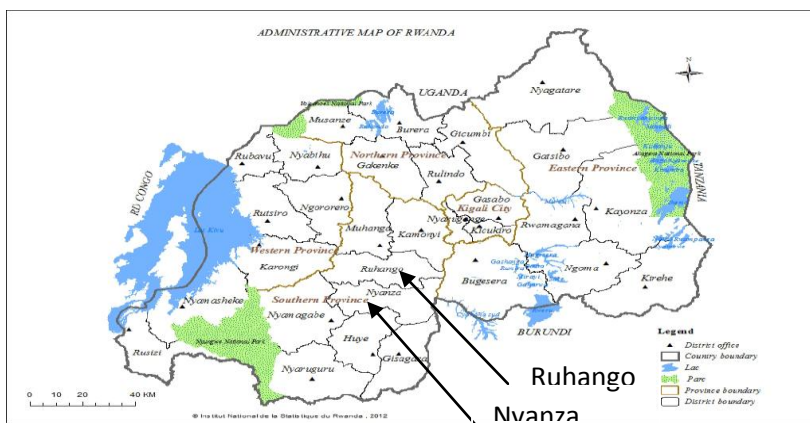


Figure 3.2.1: Map of Rwanda, showing Nyanza and Ruhango districts

3.3. Data collection

In order to achieve the objective and to answer research questions, several methods were used as well as several materials.

First of all data was collected through the review information already available to get a general knowledge about dairy sector in Rwanda, the case study and the firm-farmer relationship. Books, articles and several reports were used.

Interview with farmers and the dairy

At the beginning of the field work, meetings with key persons among farmers and the Nyanza Dairy staff were organized to get the views on the business case. A semi-structured interview was used to get detailed information. During this stage, I also got the opportunity to communicate the importance of the tool to respondents. A check list with possible challenge areas was also used to make sure that some important questions are missed out.

Table 3.3.1: Selection of respondents for case description

Type of respondent	Total	Function	Sex	
			Male	Female
Farmers (Respondent)	4	<ul style="list-style-type: none"> • MCC quality manager • MCC Accountant • Farmer 	1 1	1 1
Firm (Respondent)	3	<ul style="list-style-type: none"> • Manager • Accountant • Production Manager 	1 1 1	
Milk collectors (Respondents)	2	Collecting milk from farmers and delivery to MCC	2	

Statement formulation and review

Based on information collected from both the desk study and the primary data collection a case description report was compiled, and a list of statements was formulated. Mr. Murasira Pascal from the Agri-pro-Focus Rwanda and Mr. Ted Schrader from CDI reviewed statements reviewed statements and suggested some changes and improvements.

Business case assessment tool (2-2 Tango)

The assessment was done using the 2-2 Tango tool. This is a research tool that allows gathering views from respondents by scoring a set of same statements. (Appendix A)

During this process, both farmers and Nyanza dairy scored same statements and the scoring consisted indicating the level of agreement with the statement. Statements were grouped depending on challenge areas.

Our respondents were in two different groups made of farmers and Nyanza dairy. All the personnel of the dairy that were initially interviewed participated in the scoring exercise too. Farmers were selected among two cooperatives: Gwizumukamo from Busoro Sector and Turengere Aborozi in Kirengere sector.

In order to realize this research, I chose to work with cooperatives hoping that it would be easier to meet with farmers through cooperatives. I realized that farmers expect to get per diem when they are called for such activities. As mentioned in chapter 2.3.2 this habit was introduced by development agencies.

This happened with Busoro farmers and I had to meet them at their farms and it was challenging as I could only meet 5 farmers per day. In the future it would be good to first make sure that farmers are willing to meet as a group but also efforts have to be made to change the mind set about being given allowances.



Figure 3.3.1: Farmers during business assessment

Table 3.3.2: Clustering of our respondents (Busoro farmers)

Type of respondent	Number	Function	Gender	
			Male	Female
Farmers	11	Production	8	3
Nyanza Dairy	3	Processor	3	0

Table 3.3.3: Clustering of our respondents (Busoro farmers)

Type of respondent	Number	Function	Gender	
			Male	Female
Farmers	13	Production	9	4
Nyanza Dairy	3	Processor	3	

3.4. Data processing and interpretation of scores

The data obtained was entered in the 2-2 Tango tool to generate graphs. The 2-2 Tango tool is a research tool that is based on statements survey and data processed with excel to produce results that can clearly show and compare the relationship between two parties in terms of percentages and average scores.

Interpretation

The tool produces graphs which are easily understood by farmers and the processor. The interpretation is based on the graphs produced which show the level of agreement or disagreement of some same statements between farmers and the dairy. The green line in sample below shows the average score and represents the acceptable agreement.

If scores are above the average, the relation is good and needs to be maintained. Below the average, there is a need for improvement and more discussions are necessary to establish why. More focus is also put on scores where the level of agreement is low. Example of a challenge is whereby farmers score 80% while the company scored 50%.

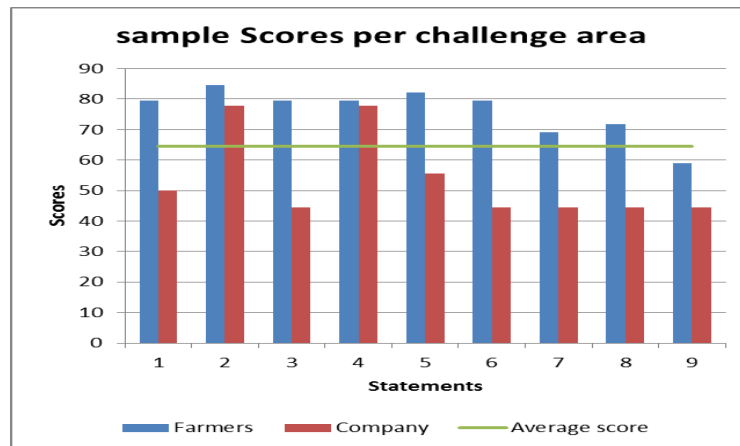


Figure 3.4.1: Sample scores pre challenge area

3.5. Debriefing and focus group discussions

The nature of the tool used to collect and process of the data, the 2-to-tango tool, required that after analyzing data, both the researcher and respondents discuss results. This is important in this research because it is during the debriefing that respondents reflect on results of the assessment. Each group was called to share and discuss the self-assessment results and from the discussion they can themselves identify what everyone needs to work on for a sustainable and shared dairy sector development. In Busoro sector, farmers who took part in this exercise were 28. Buhanda farmers were 11 but the discussion was more interesting as farmers in Turengeraborozi cooperative seemed to be much more interested in the results.

During this process, scoring results were presented to every group separately. Respondents were encouraged to ask results of any statement of their choice. This also helped to know which statement they were eager to know its result. Both farmers and the dairy were encouraged to see how they can approach and correct situations that are not good and how they can maintain and improve what is working well.

3.6. Limitation of the study

Although I managed to carry out our research, I encountered some limitations. Despite the fact that I had reviewed the first list of statements together with Agri-Pro-Focus and CDI, during the scoring I realized that there was still need for some improvements. This research was done on a small size of population in a short period of time. Therefore, results answer our questions but cannot really be generalized.

The first scoring process with Gwizumukamo farmers, in Busoro sector, revealed to us that there were still some gaps that needed improvements. We decided to keep it but make another list of improved statements for the second cooperative. In the future, it would be good to first have a scoring trial before. This implies that results from both cooperatives can be compared to about 80%.

4. NYANZA DAIRY BUSINESS CLUSTER

This chapter discusses findings of the business case assessment. It first describes the current situation of the business case, for both Nyanza dairy and farmers and follows results of the 2-2 Tango tool with some comments.

4.1. *Business case current situation*

Currently the dairy operates in old buildings and is equipped with old machines, one line by each product.

The dairy employs 32 staff out of whom 18 are women. Part of the processed milk, almost 30%, comes from Songa farm. Songa farm, formally owned by ISAR currently belongs to the dairy with 370 exotic cows on around 400 ha.



Figure 4.1.1: Nyanza dairy building

Nyanza dairy is a business oriented company but on another hand it still belongs to the state. For that reason, it has a legal responsibility to assist farmers. For the moment, what they do is to only accept their milk production. The dairy also owns milk cans and rent them to MCCs and other suppliers who want to supply milk to the dairy. In the past, middle men have been trained on how to taste acidity and water content. In case one of the MCCs has a problem of electricity and the generator does not work, the dairy offers a car to bring milk instantly to the dairy.

Challenges faced by the dairy.

Old machinery

The dairy machinery and buildings are old to the point that they all need a complete innovation. “One of the main challenges we always face, is that our machines are very old and often have technical problems” Said the manager.

Spare parts and technicians

Whenever there is a need for a spare part, it has to be brought all the way from the Netherlands and this result in inactivity for a certain period of time which in turn causes loss of milk through

the whole milk value chain. Technicians also sometimes come from out of the country and it takes plenty of time to repair the faulty machines.

Milk production increase

The Government wants all the milk to be processed, yet Nyanza dairy is the only milk processing plant in the area; this means that it is supposed to receive and process all the milk produced regardless of its condition described above. The dairy, much as it is state owned; it is considered as a business entity and cannot accept any loss that could be averted. On one side, the dairy demands MCCs to only supply milk to the dairy, but on the other side the dairy is sometimes not able to receive all the production. The plant was initially enough, but with the current milk production which has increased to almost three times, there is a clear need for innovation and expansion.

4.2. Cooperatives

Nyanza dairy works with several farmers' groups as mentioned in the point 2. Initially we had chosen to do our research on the relationship between the dairy and Gwizumukamo cooperative. The reasons that made us to choose Gwizumukamo are that, first, it is the one that is far from the dairy and secondly according to Nyanza dairy it is the one that supplies a larger quantity when compared to other cooperatives. Gwizumukamo cooperative started its operations in September 2008; it is located 37 kilometers away from Nyanza dairy in Busoro sector.

In course of our field work, we also decided to include farmers of Turengeraborozi of Buhanda Sector in Ruhango district. This was mainly requested by CDI but also it was an opportunity to get more farmers in the scoring process because those we managed to meet at Busoro were not sufficient.

4.2.1. Functioning of the cooperatives

4.2.1..1. Gwizumukamo cooperative

Farmers have been grouped in a cooperative called *Gwizumukamo*² since September 2008. They are the owners of Busoro MCC. In total they are all 136, 106 men and 30 women. Busoro MCC is equipped with a modern house, a milk tank of 2000 litres and generator to work as a backup in case there is no electricity.

Members choose their leaders committee which is in charge of the cooperative management, but mainly the management of the MCC. Members meet once a month. Two permanent staff are employed by the cooperative, one in charge of receiving milk and another of the accounts. Farmers interviewed were happy with the current elected committee but accused the former one to have mismanaged the cooperative.

² Gwizumukamo: Is a Kinyarwanda name that means improve milk production.

4.2.1.2. Turengere Aborozi Cooperative

This cooperative is made of 28 members who are all farmers. It is located in Kirengere sector, Ruhango district, a district neighboring Nyanza district. This cooperative started in 2009 through PADEBL project. Similarly to farmers of Busoro, they own a MCC in a new and modern house, a milk tank of 2000 litres and a generator. The MCC is located in Buhanda city centre, on the road connecting to Karongi, former Kibuye. This road is not tarmac but in good condition compared to the one to Busoro.

Their functioning is similar to the one of Busoro but it seems that Buhanda farmers are more united, happy with their union than Busoro farmers.

4.2.2. Challenges faced by farmers

i. Production loss

One of the main challenges that farmers face is the loss of their milk when the dairy is not working. They are the ones to lose because they cannot supply their milk to the MCCs. When the dairy is not able to process milk, it informs the MCC that it should not receive milk. The farmer who is supposed to always sell his produce to the dairy finds himself in a situation where he is the one to lose as he cannot instruct cows not to release milk. MCC mentioned that in case they get such message from the dairy and they still have milk in the tank, they try to sell it at a lower price and to any buyer. The experience is that most buyers who bought milk under such situations either did not pay for the milk or paid with difficulties.

ii. Late payments

The selling of milk starts from the farm. A farmer gives milk to the milk collector who goes around to different farmers and keeps records of every farmer he has collected from. The same records are also kept by the farmer. The milk collector supplies the collected milk to the MCC and the MCC keeps records from every milk collector.

Farmers expect to be paid after fifteen days. After every 15 days of supplying milk, the dairy starts processing payments. During our interviews, the dairy informed us that it only takes three to five days. A payment order is then sent to the bank. In the bank, it also takes 3 to 5 days. The MCC that has to pay milk collectors and in turn pay farmers said that it never goes beyond two days before money is credited on their account. Under normal conditions, the farmer gets his money between seven and thirteen days, after the fifteen days of the supply. Some of the farmers that were interviewed complained that sometimes it even takes 2 months before they get paid, yet they expected their payments after fifteen days. This will be discussed later in 2-2 Tango results where we shall see that farmers scored very low on payment issues while the dairy scored high.

iii. Artificial insemination

Another challenge is that farmers are requested to practice artificial insemination but sometimes they don't get this service timely when needed due to lack of semen or the unavailability of the vet. Due to health conditions of cows, the level of artificial inseminations failure makes farmers believe that the old method is still the best option.

iv. Feeds and medicines

During the dry season, feeds are scarce because the main feeds is grass and yet they don't know how to preserve it. Initially, according to farmers, the cooperative was not well managed but at the moment farmers are happy with the newly elected committee.

4.3. Milk collectors (Abakamyi in Kinyarwanda)

The role played by these people in the dairy sector is to be considered. First of all it is stressed in the name given to them. *Umukamyi* comes from the word *gukama* which means to "milk". Even though their role is just to collect milk and supply it to the MCC, they are considered the ones that milk cows. At first, I thought they were the owners of cows, their actual role is trading. As the MCC, they get milk cans from the MCC and are requested to supply milk to them. They then go around collecting milk from farmers.

They are the first people that measure and test the milk. They have forms where they note the quantity of milk received from the farmer and the farmer also keeps with the same records. During payments, milk collectors are also the ones that move around and make these payments to the farmers. Their daily and direct contact with farmers and the MCC places them in a position that whoever wants to understand or do

anything in the field needs to pay attention to them.



Figure 4.3.1: Milk collector

4.4. Production

Over the last five years, dairy farming in Rwanda has become more intensive to increase the amount of milk produced by each cow and each farmer. This resulted in an increase of milk production for some farmers from 1 or three litres per cow to more than 20 liters per cow. The MCC receives around 1000 liters of milk per day during rainy season and 600 liters per day in the dry season. Farmers that were interviewed were happy about the milk production but were worried that the market is not assured.

Table 4.4.1: Milk collected and sold by Busoro MCC

M o n t h	Total Nyanza	Total Busoro	Other buyers	Grand Total
Feb-11	12,165.00	52.00	-	12,217.00
I. Mar-11	15,768.50	4.00	-	15,772.50
Apr-11	1,008.00	48.00	13,237.00	14,293.00
May-11	7,055.00	1,522.50	8,849.50	17,427.00
Jun-11	11,532.00	1,142.50	8,040.00	20,714.50
Jul-11	4,978.00	355.50	8,946.00	14,279.50
Aug-11	1,060.00	32.00	4,149.50	5,241.50
Sep-11	-	32.50	4,810.00	4,842.50
oct-11	12,510.00	6.00	-	12,516.00
Nov-11	2,064.50	8.00	-	2,072.50
Dec-11	3,429.50	-	-	3,429.50
Jan-12	4,284.00	3,834.50	-	8,118.50
Feb-12	9,600.50	1,210.50	-	10,811.00
mrt-12	9,948.00	4,552.00	-	14,500.00
Apr-12	13,611.50	1,161.00	-	14,772.50
May-12	2,506.50	388.00	-	2,894.50
Jun-12	7,175.00	2,674.00	-	9,849.00
Jul-12	13,968.50	1,886.00	-	15,854.50
Aug-12	8,201.50	687.00	-	8,888.50
Total	140,866.00	19,596.00	48,032.00	208,494.00
Percentage	67.56	9.40	23.04	100.00

Source: Majyambere.

4.5. Quality and standards

Milk is a product that requires high level of hygiene and respect for the required standards. From the farm to the dairy, tests are carried out to check if the received milk meets the requirements. Two principle tests are always supposed to be done at every point, namely: acidity and density tests. The acidity tests measures the extent to which the microbial action caused the milk to ferment. Each and every milk collector is trained on how to carry out both

tests. One of them, when asked if he tests all the milk he collects, he revealed to us that he does not test every production from all farmers. He said:

“I do the test once and keep monitoring the quantity of milk I receive from the farmer. When I notice an increase, I then have to test milk because in normal situation the production should decrease not increase. So farmers don’t notice when I actually carry out the test.”

At the dairy level, when the cooperative or any other individual brings milk, the first step is testing of the acidity and the density. Observation is also done to check the milk colour and as well as its scent. “We only accept milk that meets quality requirements, we cannot bear the loss when the quality turns out bad” said one the dairy staff.

During our stay at Busoro MCC, the MCC supplied milk and it so happened that its quality was not as good as required. The level of acidity was slightly above the normal. In such cases, the dairy receives the milk but has to first boil it in the presence of the supplier. In case the boiling process fails (by clotting) the dairy does not accept and farmers lose.



Figure 4.5.1: Milk reception at Nyanza dairy.

4.6. Markets and prices

Generally, Rwanda milk producers do not satisfy the country’s needs. This can be evidenced by the fact that all the products of Nyanza dairy are usually sold out immediately. Nyanza dairy mainly produces cad milk and yoghurt but also occasionally Cheese. Yoghurt is the most preferred on the market demand. All products are sold in bulk to wholesalers who sell on retail prices or distribute to different markets in the country. According to the Nyanza dairy manager, the market is readily available and will continue to be so, for long in the future.

Farmers do have the market for their milk production but all the farmers we interviewed were not happy with the price. The main buyer for those in the cooperative is the dairy through the MCC. The MCC also sell some to kiosks and restaurants nearby.

“We are losing a lot. When you compare how much a bottle of banana beer or sorghum costs to the price we get paid, it is a shame” Said a farmer.

Prices are always set by Nyanza dairy and other small buyers in the area follow the wave determined by the main player. To determine the price that farmers should get, the dairy first calculates all the expenses needed to get the final product on the market. This means that the dairy also considers how much it will sell the final product. According to the Nyanza dairy, the dairy belongs to the state, hence the main objective is not to make huge profits but to assist farmers. This means that the farmer gets a reasonable price depending on the market demand. “We pay higher than any other buyer, but MCCs may be paying little because of the service offered to farmers” said the dairy Manager.

4.7. Contracts

Any form of contract or agreement goes with the flow of milk from the farmer to the processor. In the case of Nyanza dairy, farmers are grouped in cooperatives. Middle men, known as milking men (Abakamyi in the local language) collect milk from different farmers and supply milk collection centers. Those are independent business men and their role in the dairy sector should not be minimized as they are the ones who regularly get in contact with farmer. The dairy gives milk cans to MCCs and in turn MCCs are expected to supply milk to the dairy. The MCC also gives cans to middle men who are therefore requested to supply milk to MCC.

Only milk collectors have signed contracts with the MCC. The contract clearly stipulates that the milk collector should never sell milk to any other buyer a part from the MCC. The MCC also agrees to pay on time.

Supply contracts, between the dairy and the MCCs, are subject to a flexibility that is specific to the situation. Even though farmers have the responsibility to supply milk as provided by agreement, they also have the freedom to sell some quantity if necessary. To quote the dairy manager he said:

“Sometimes the dairy is obliged to close eyes when it comes to side selling. This is because sometimes the dairy is also not able to take all the milk production”.

It is the same situation between MCCs and middle men, but all milk collectors interviewed said that they just don’t collect milk when the MCC is not ready to receive it. This means that in their contract they are supposed to only supply to the MCC but the MCC is not able to ensure the market always.

4.8. Cost and benefits

When it comes to costs and benefits, the dairy, like any other business entity at its level, knows very well what it gets from what it invests. They even determine the price at which to give the farmer after calculation of how it would cost them to get and sell one litre of milk. Farmers are happy with the increase of production but none of our interviewees knew what it costs him to produce one litre of milk hence they cannot really know whether the dairy farming is profitable or

not. It is not easy to determine how much one litre of milk costs. All they know is that they don't get profits from dairy farming.

4.9. Business assessment results

4.9.1. Busoro MCC results

For all challenge areas, the average score is 56,8%. Both farmers and the dairy agree that the production is still very low. When it comes to stakeholders, there is a high difference in scores; we will later see what reasons are behind this. About quality, costs and profits both the company and farmers are positive and seem to be in agreement (Appendix B).

Table 4.9.1: Challenge areas, Busoro

1. Challenge areas	
2.	3. Production
4.	5. Cooperative functioning
6.	7. Market and prices
8.	9. Contract
10.	11. Quality and standards
12.	13. Cost and profits
14.	15. Stakeholders

It is clearly remarkable that in general both farmers and the dairy are below the average on many challenge areas. It is only on challenge area five and six that all are positive.

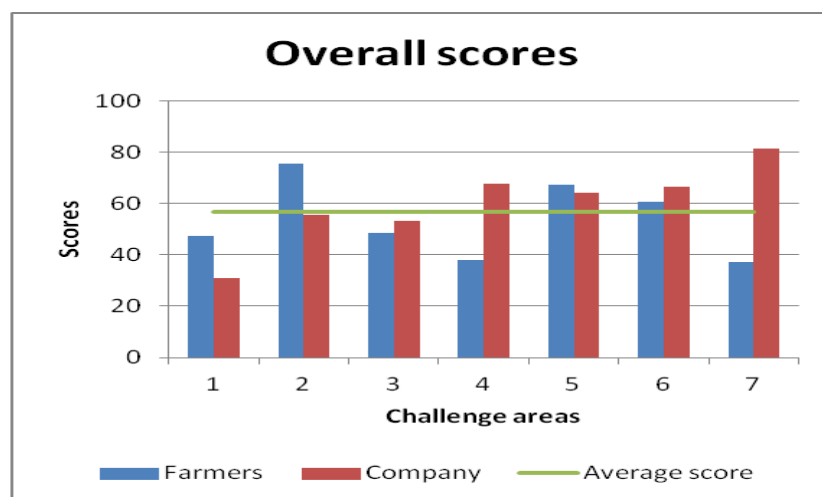


Figure 4.9.1: Overall scores

It can be observed that the perceptions of farmers and the company are quite different for challenge area 4 (contracts) and area 7 (stakeholders).

On challenge area 3 (market and prices), challenge area 5 (quality and standards) and 6 (cost and profits) farmers do almost agree with the dairy on those issues.

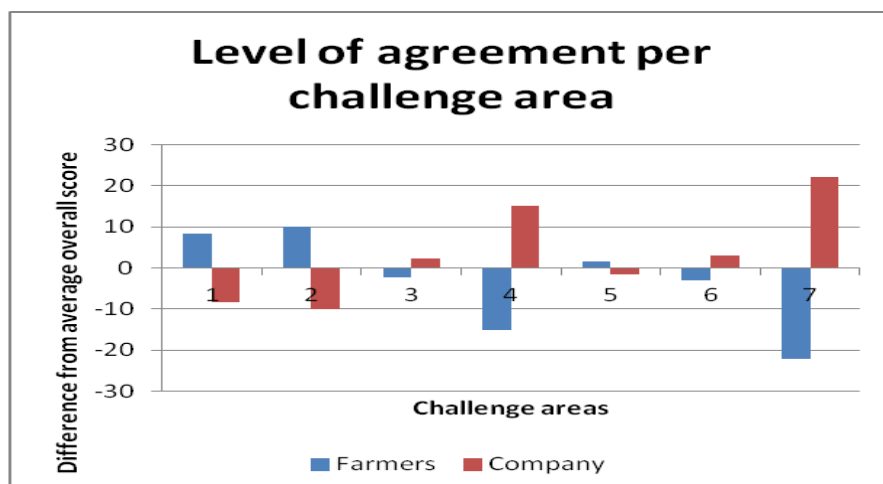


Figure 4.9.2: Level of agreement per challenge area

1. Challenge area “Production”

Table 4.9.2: Statements production

Statements challenge area “Production”	
1.1	Farmers have high milk producing cows
1.2	Farmers have enough knowledge in high milk production
1.3	Milk production is increasing
1.4	Farmers have enough feeds
1.5	Land to cultivate the grass in enough
1.6	High milk production feeds(Concentrates) are affordable
1.7	Medicines are affordable
1.8	The farmer is able to calculate the cost of one litre of milk
1.9	Farmers are trained in dairy farming

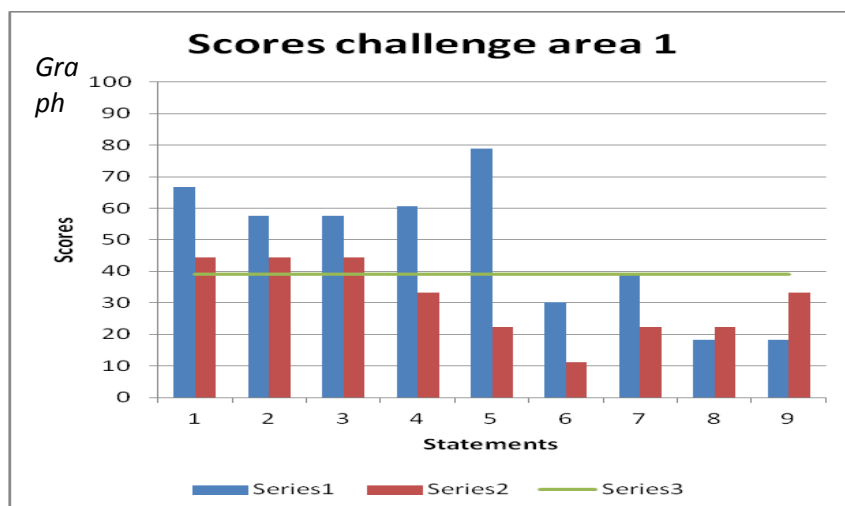


Figure 4.9.3 Scores production

The company thinks that farmers have enough land to cultivate the fodder while farmers say they don't.

Both the dairy and farmers give low score to the last four statements (cost of feeds, medicines, cost calculation and trainings).

About the availability of good milking cows, we can see that farmers are more or less happy with the current level while the dairy would like to see more

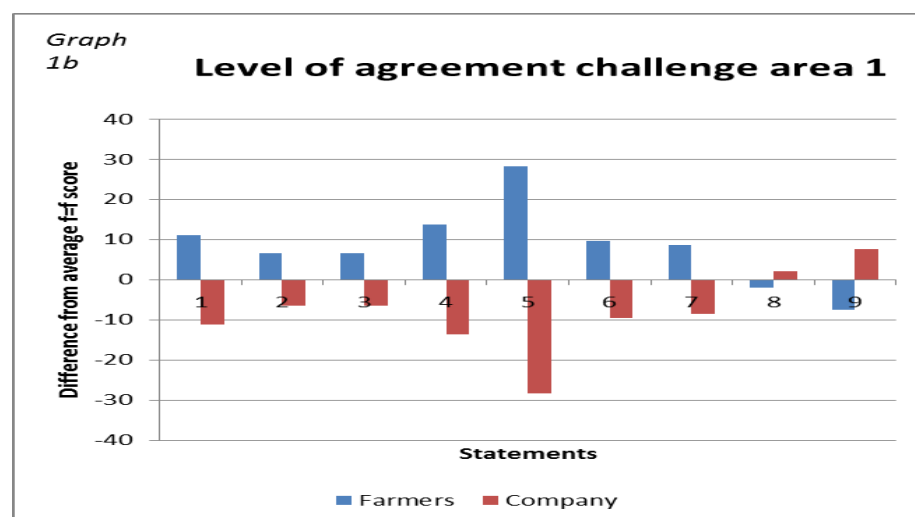


Figure 4.9.4: Level of agreement on production

Production is in general a point farmers have different views from the dairy.

On the point 6, feeds affordability to the farmers, it is clear that they all accept that it is not affordable at all; 1% for farmers and 30 for the dairy. This probably is the least scored statement. Also medicines are expensive. In terms of training, even though farmers and the dairy score very far from the average score the dairy insists that it offers training to the farmers.

2. Challenge area cooperative functioning

Table 4.9.3: Statements Challenge area cooperative functioning

Statements challenge area "Cooperative functioning"	
2.1	The MCC treats all farmers equally
2.2	The MCC is important in the dairy marketing
2.3	The MCC represents farmer's interests
2.4	Milk collectors are important in dairy marketing
2.5	Farmer's representatives work for farmers interests
2.6	Milk collectors do their job correctly
2.7	Farmers are happy with the cooperative functioning
2.8	Farmers know how the cooperative finances are managed
2.9	Farmers understand the importance of being in cooperatives

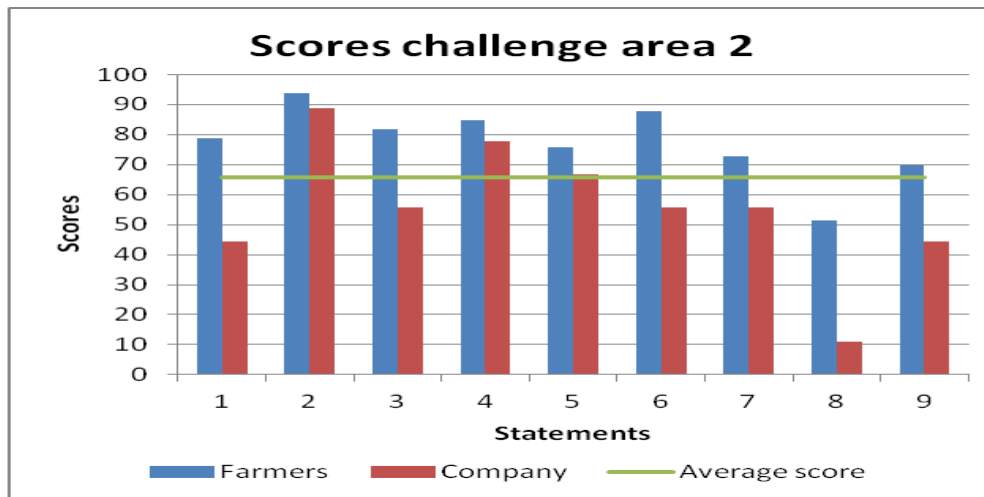


Figure 4.9.5 Scores, Cooperative functioning

For the MCC, all farmers are treated in the same way. Stamen (1) even those who do not belong to the cooperative, their milk is collected regardless of their membership. The importance of the MCC is highly appreciated by both farmers and the dairy. 93.9% for farmers and 88.9% for the dairy. With regard to the management of the cooperative's finances, both parties are skeptic. It can also be observed that farmers do trust the cooperative management even though the dairy's trust is low.

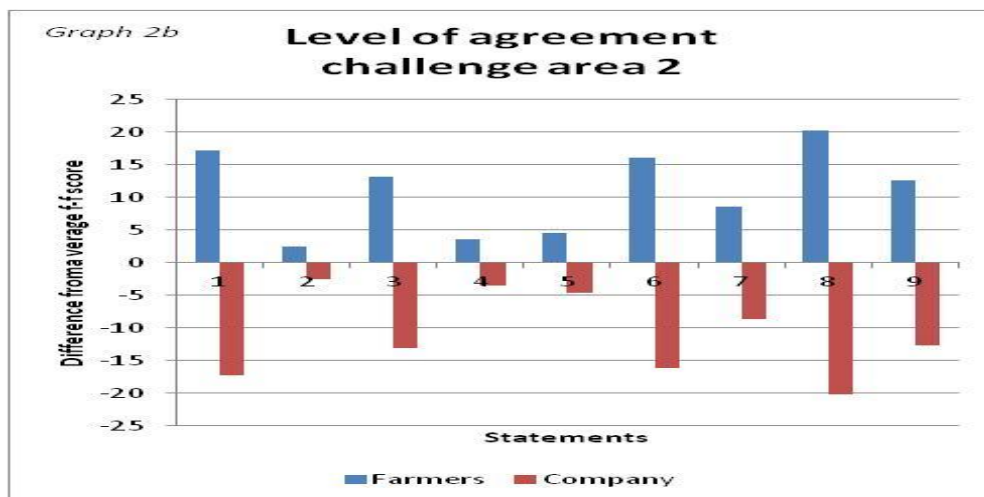


Figure 4.9.6: Level of agreement, Cooperative functioning

It can be observed that the level of agreement in this area is not high. It is only on statement 2 (The importance of the MCC) and statement 9 (Importance of being in cooperatives) that the level of agreement is a bit high. Farmers and the dairy differ in the way they see the importance of milk collectors even though they all agree that they are important. About the functioning of milk collectors, the low agreement is based on the fact that expectations are different from farmers and the dairy. For the farmer, milk collection process is perfectly done, whereas for the dairy, performing its task perfectly means checking the milk quality all the time.

3. Challenge area “Market and prices

Table 4.9.4: Statements challenge area market and prices

Statements challenge area “Market and prices”	
3.1	There is enough market for milk
3.2	Famers know the requirements on milk quality
3.3	Farmers decide where to sell their milk
3.4	The farmer gets a fair price
3.5	The dairy accepts all the collected milk
3.6	Other buyers give a higher price than the dairy
3.7	The dairy accepts milk all the time
3.8	The dairy pays on time
3.9	The farmer benefits from price changes

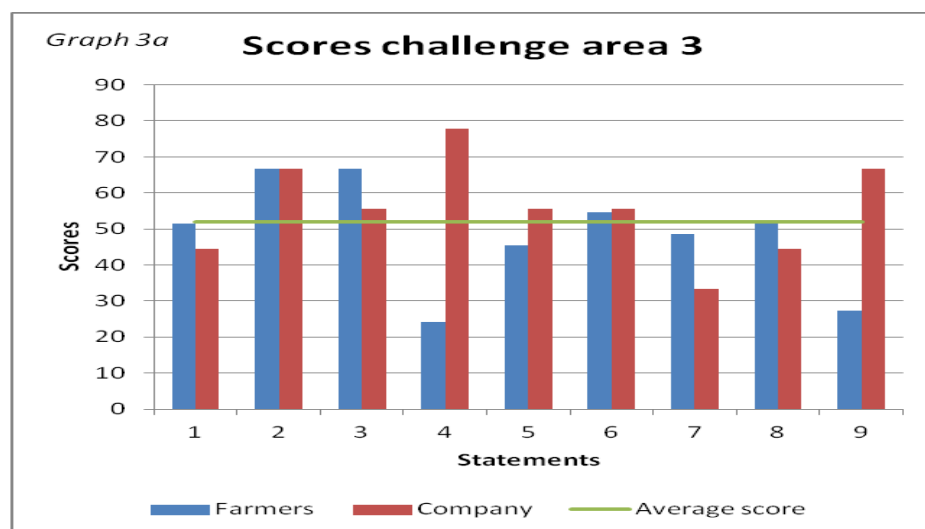


Figure 4.9.7: Scores challenge area 3

It can be observed that farmers are negative about the price they get, (24.2%) while the dairy thinks that there is no problem with the pricing. (77.8%). Statement 4, about the availability of the market, farmers and the dairy scored below that average line. About the capacity of the dairy to handle all the milk production (statement 7) both sides scored below the average. Statement 9 (Changing of prices) shows that whenever there is a change in prices it benefits the dairy not the farmer.

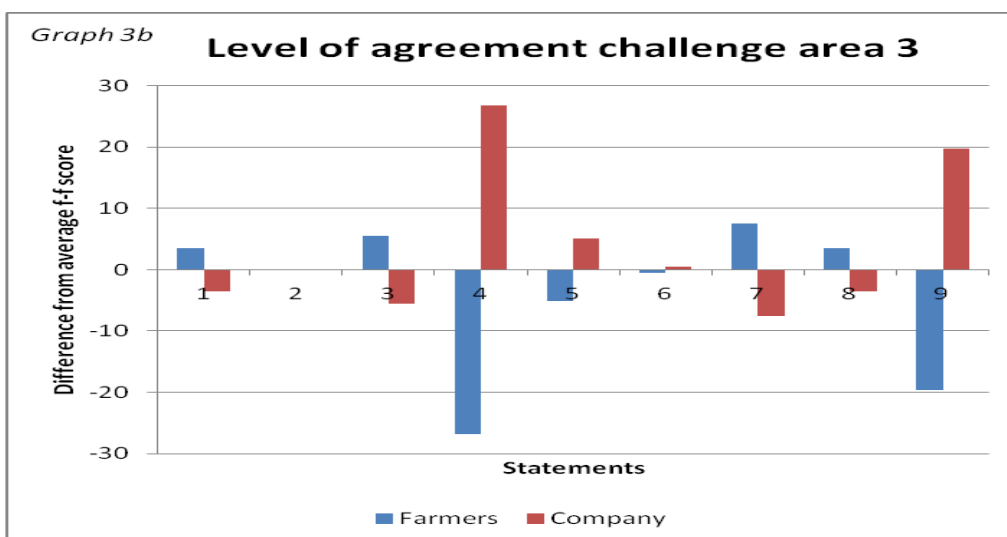


Figure 4.9.8: Level of agreement for market and prices

It can be observed that the level of disagreement about the fairness of the price is high, and that whenever it changes it is the dairy that benefits from the change. Here there is a case of absolute agreement about the knowledge of the quality requirements and standards. About other buyers paying a higher price than the one offered by the dairy, farmers and buyers scored slightly above the average area but they all have the same view.

4. Challenge area “contract and agreements”

Table 4.9.5: Scores for contract and agreements

Statements challenge area “contract and agreements”	
4.1	Contracts and agreements are important in milk market
4.2	Farmers understand the content of contracts
4.3	Farmers can negotiate contracts with the dairy
4.4	Farmers are consulted in contracts preparations
4.5	The cooperative respects the contract and agreements
4.6	The dairy respects contracts and agreement
4.7	Milk collectors respects the contract
4.8	Contracts are clear about dispute settlements
4.9	Farmers are allowed to sell to other buyers.

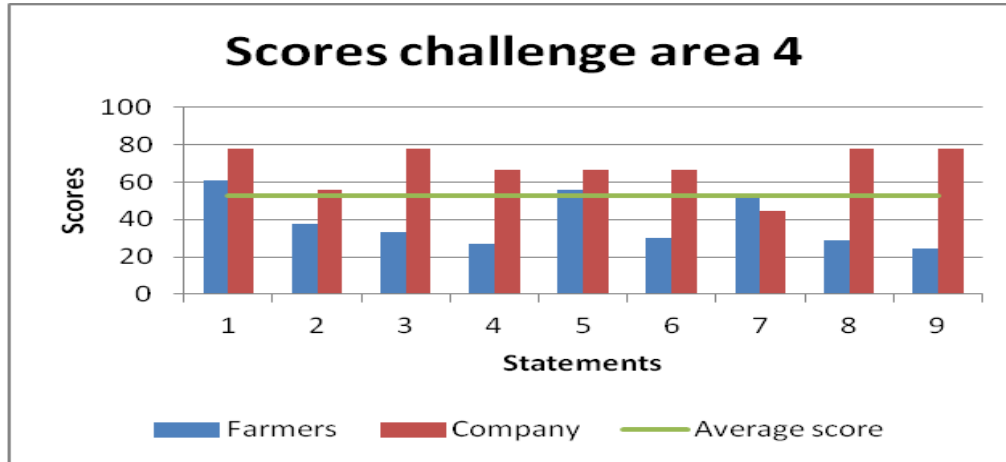


Figure 4.9.9: Scores, production

It is only about the importance of contracts/ agreements where both farmers and the dairy have an agreement that goes beyond the average. On the remaining of statements, farmers scored below the average line or slightly near the average line. ((The cooperative respecting the contracts and agreements and milk collectors respecting contracts and agreements they have with the MCC)

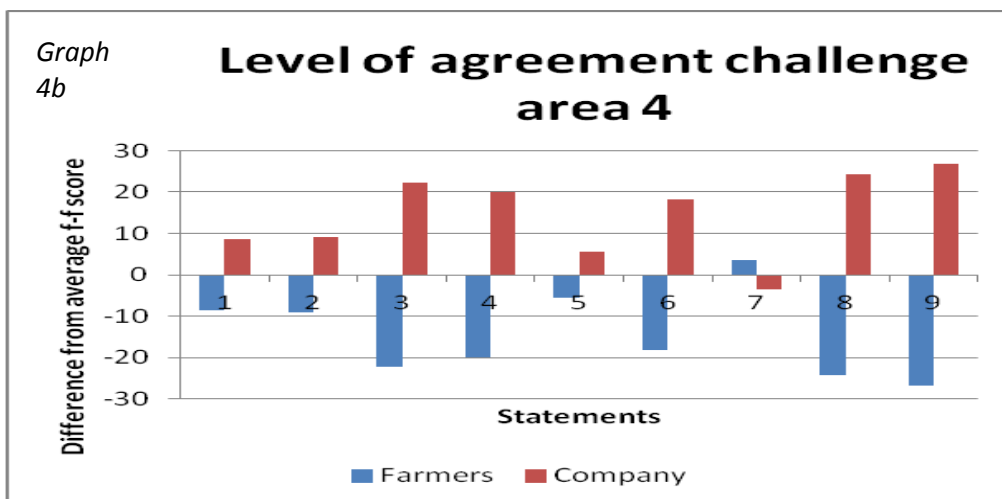


Figure 4.9.10: Level of agreement, contract and agreements

It can be observed that there are disagreements about statements 3, 4, 6, 8 and 9. In most cases farmers do not know anything about agreements between the MCC and the dairy, thus less scores.

5. Challenge area quality and standards

Table 4.9.6: Statements, quality and standards

Statements challenge area “Quality and standards”	
5.1	Farmers follow requirements to have good quality milk
5.2	I know the good quality of milk
5.3	Milk collectors test milk all the time
5.4	The MCC follows quality and standards requirements
5.5	The MCC has sufficient equipment
5.6	The MCC keep records of the production
5.7	Farmers keep records of their milk production
5.8	Farmers trust measurements of milk collectors
5.9	Our milk is better than milk from others

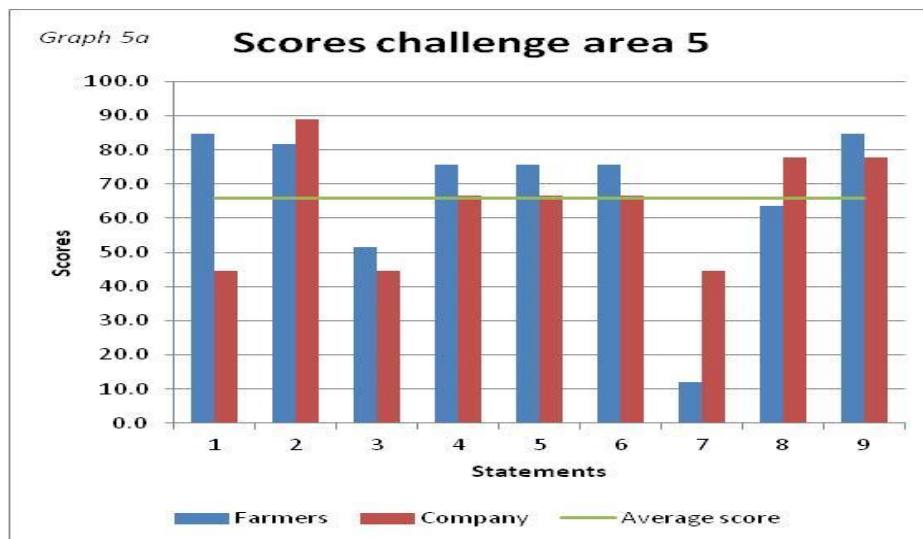


Figure 4.9.5: Scores, Quality and standards

It should be considered that farmers don't keep records of their production. The statement 1 also shows that farmers believe that they are doing their best to have the good quality milk while the dairy does not agree with this statement

Much as it is a requirement, both the farmers and the dairy acknowledge that milk collectors do not measure milk all the time.

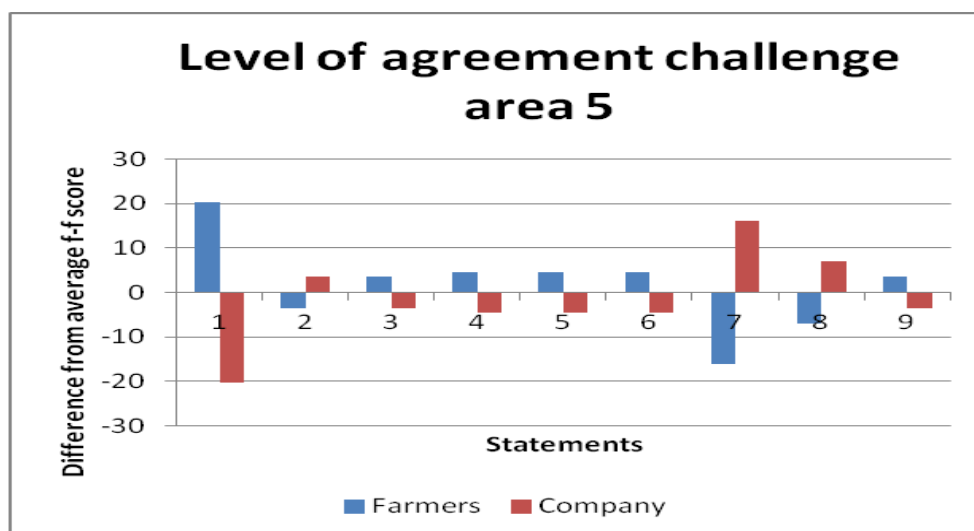


Figure 4.9.6: Level of agreement, quality and standards

Generally, the level of disagreement is not high in this challenge area apart from the challenge area 1 and 7 where the disagreement is high. This is about production record keeping. The high score by the dairy compared to the concerned farmers shows that the dairy believe that some farmers may be recording their production.

6. Challenge area Cost and benefits

Table 4.9.7 Statements, Cost and benefits

Statements challenge area "Cost and benefits"	
6.1	Farmers are happy to sell their milk production to the dairy
6.2	I benefit from dairy business
6.3	The dairy is satisfied with their collaboration with farmers
6.4	The dairy gets profits in milk selling
6.5	Farmers target profits in milk selling
6.6	The MCC gets profits in milk selling
6.7	Money from milk is more important than money from other agricultural products
6.8	Famers can get loans based on dairy farming
6.9	One dairy plant is enough in Nyanza production area

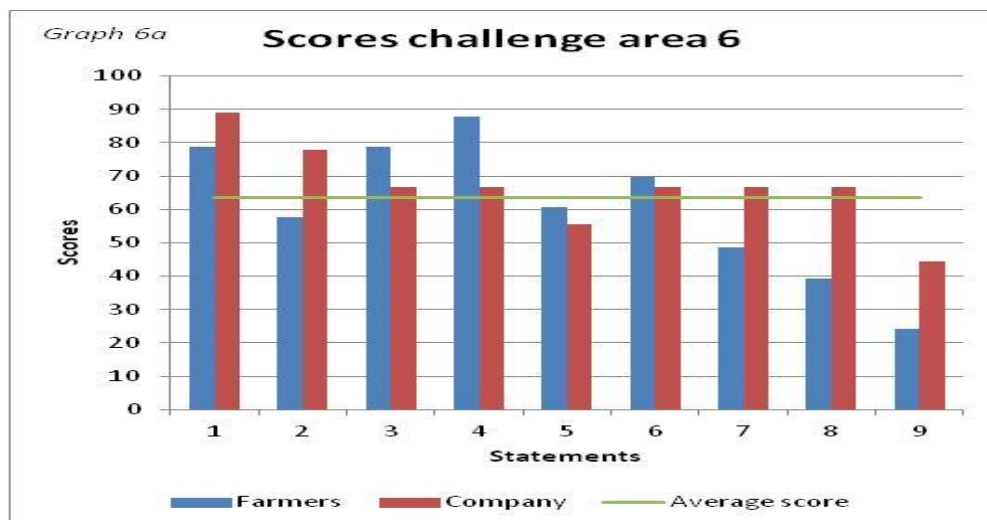


Figure 4.9.7: Level of agreement, Cost and benefits

The dairy acknowledges that it gets benefits from the dairy but the farmers disagree. The statement 1 shows that farmers are happy to sell their milk production to the dairy and the dairy is aware of it and equally happy to work with farmers.

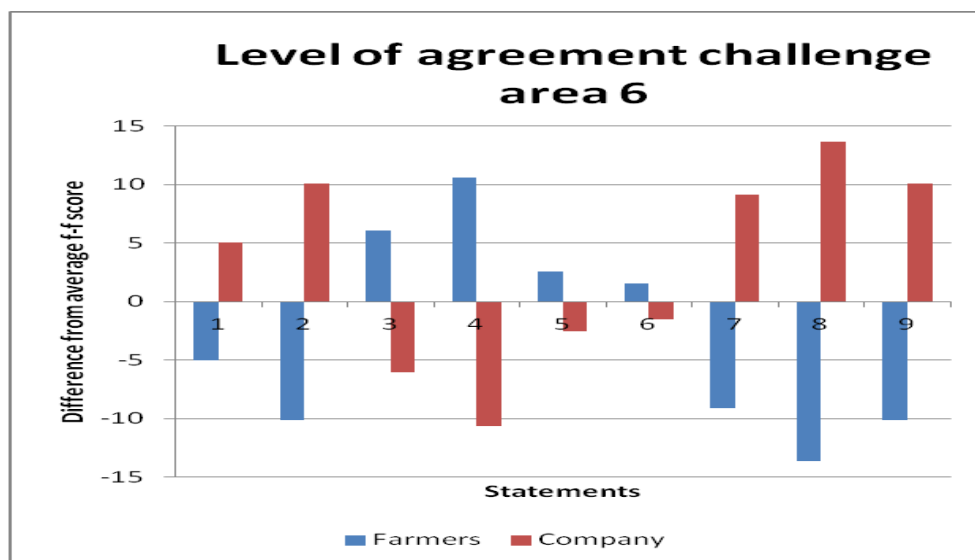


Figure 4.9.8: Level of agreement, Cost and benefits

Both the farmers and the dairy agree that one dairy plant in the area is not sufficient. There seem to be significant disagreements on several points about costs and benefits. Farmers and the dairy seem to only agree on the importance of money from milk and the benefits for the farmer.

7. Challenge area “Stakeholders”

Table 4.9.8: Statements, Stakeholders

Statements challenge area “Stakeholders”	
7.1	I know who the stakeholders in dairy sector are
7.2	I know what every stakeholder can help to achieve
7.3	Girinka project contributed to the development of dairy farming
7.4	Vets play an important role in dairy farming
7.5	Finance institutions give loans to those who want to invest in farming
7.6	The Government contribution is evident
7.7	The Government puts more efforts in production increase than market issues
7.8	There is a good collaboration between the various stakeholders in dairy farming
7.9	I need assistance from other stakeholders

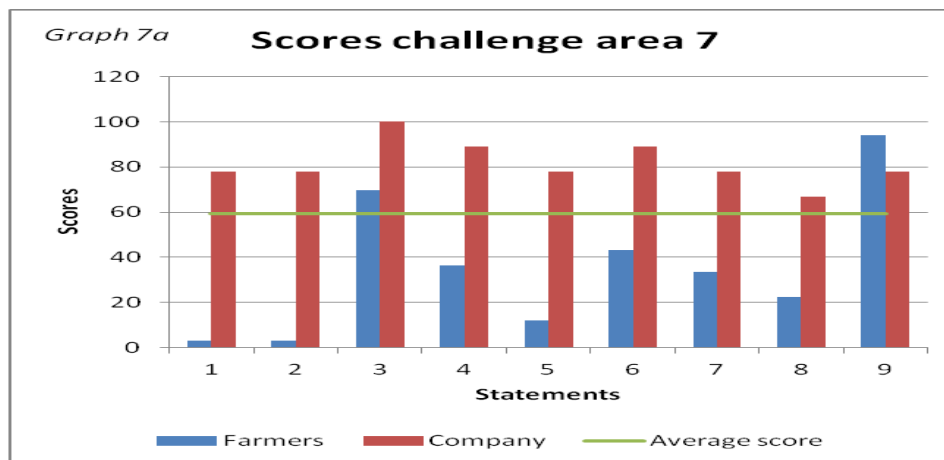


Figure 4.9.9: Scores, stakeholders

The average score is 59.4. This seems to be the most controversial challenge area. The first two statements (Knowledge of stakeholders and what they can help) farmers scored 3% and the dairy 77.8%. Apart from statement 3 and 9 farmers scored negatively on others. The ministry in charge of Agriculture, initiated RARDA with an objective to contribute towards the growth of animal production but farmers seem to ignore to existence of such important institution.

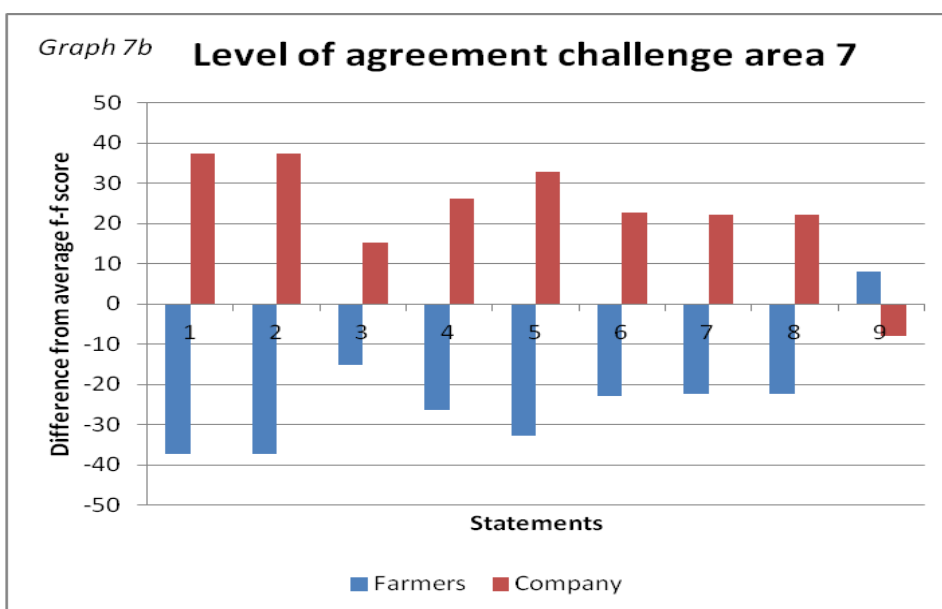


Figure 4.9.10: Level of agreement, stakeholders

It can be observed that the dairy and farmers do not have the same understanding about stakeholders at all. Low level of agreement is observed about the knowledge of who the stakeholders in dairy farming are and the contribution of the Ministry of Agriculture in the development of dairy farming. Vets, (most of them are Government vets) are appreciated by the dairy but farmers don't agree to that.

4.9.2. Buhanda MCC results

Overall results

The challenge areas are nearly the same as the ones at Gwizumukamo cooperative, the difference is that some statements have been improved and another part of perspective was added (Appendix C). Farmers seemed to be negative about production, as well as about cost and profit. The dairy is much more worried about production and also quality and standards. (Appendix D)

Table 4.9.9: Challenge areas

Challenge areas	
1	Production
2	Quality and standards
3	Cooperative functioning
4	Dairy functioning
5	Price and markets
6	Cost and profits
7	Stakeholders
8	Perspectives

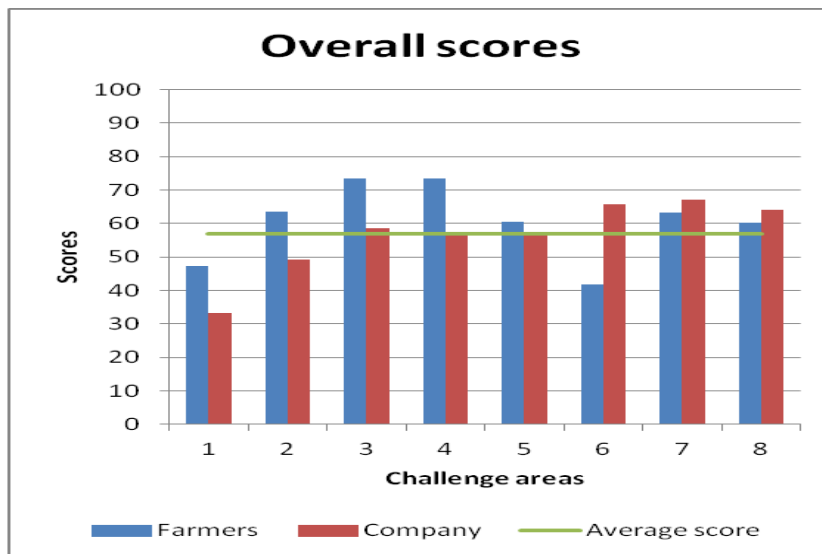


Figure 4.9.11: Overall scores

It is remarkable that both the dairy and farmers seem to be negative about the production (Challenge area 1). In other challenge areas, the scores were either above or below the average which is 57.1

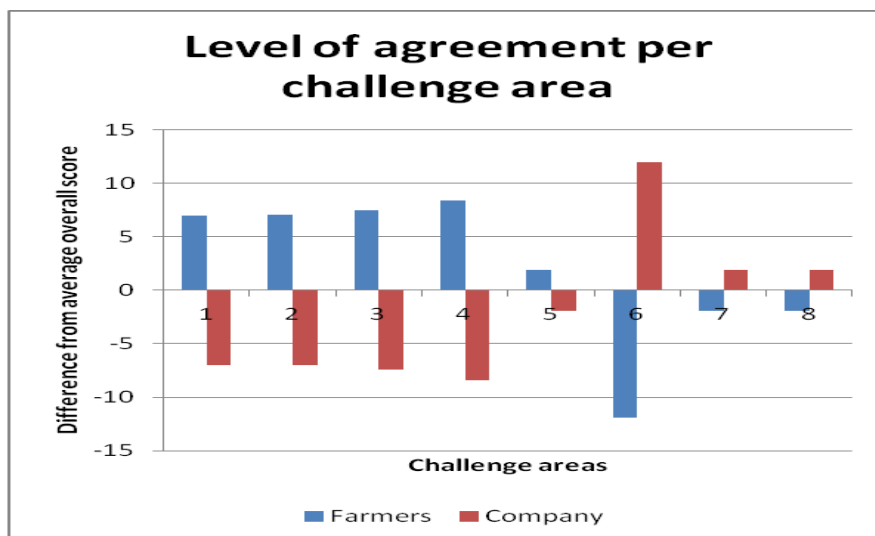


Figure 4.9.2: Level of agreement,

It can be observed that the perceptions of farmers and the company are quite different for challenge area 6 compared to other challenge areas. Only challenge 5, 7 and 8 the level of disagreement is lower.

1. Challenge area “Production”

Table 4.9.10: Statements, production

Statements challenge area “Production”	
1.1	Farmers have high milk yielding cows
1.2	Farmer gets artificial insemination easily
1.3	The artificial insemination succeeds immediately
1.4	Production per cow is increasing
1.5	Farmers have enough silage
1.6	There is enough land for grass cultivation
1.7	Farmers are happy with the zero grazing policy
1.8	Feeds are affordable
1.9	Medicines are affordable

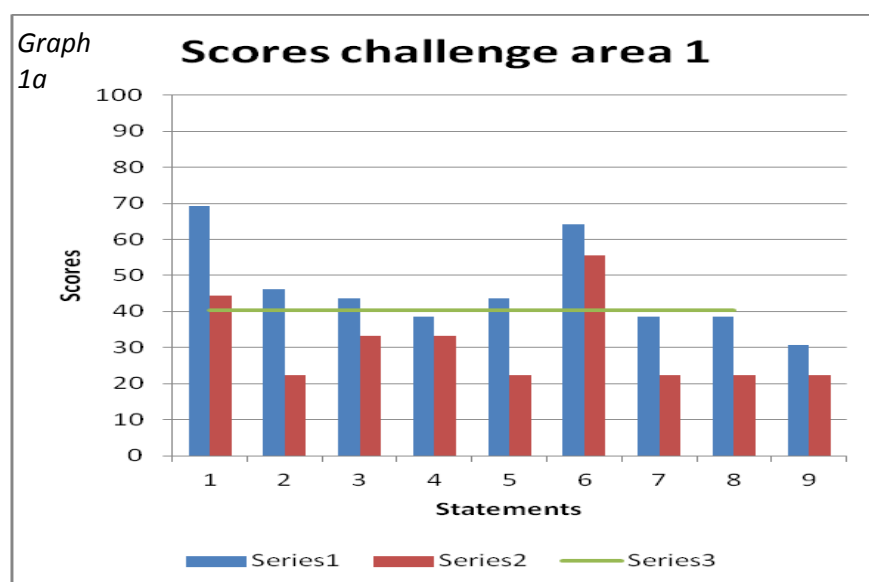


Figure 4.9.1: Scores, production

It is only in the area of land availability and of high milk producing cows availability that both farmers and the dairy scored above 50%.

Farmers give a high score about high yielding cows but still the dairy scored less than 50%. Artificial insemination is a challenge and the dairy recognizes it than farmers. It seems that in Buhanda, land is available as farmers scored above 60 percent. By the scores given to the happiness or adoption of zero grazing, statement 7, farmers have not bought the policy.

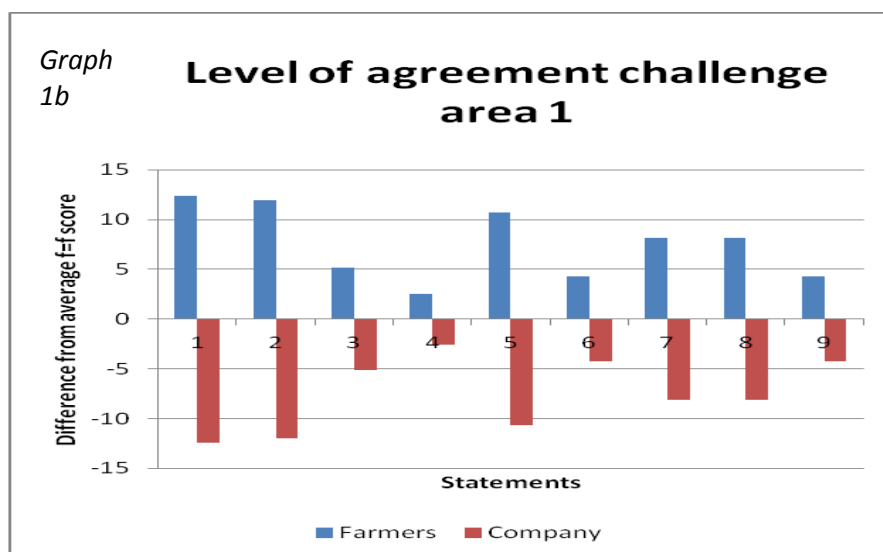


Figure 4.9.2: Level of agreement, production

It can be observed that even though both the dairy and farmers seem to be generally negative, Their views are different. Farmers think that the production per cow has been increasing but the dairy is not yet satisfied. Also, the dairy would like to see the farmer getting artificial insemination much easier than the current situation.

2. Challenge area (Quality and standards)

Table 4.9.11: Statements, quality standards

Statements challenge area "Quality and standards"	
2.1	Milking is hygienically done
2.2	Farmers know the required quality and standards of milk
2.3	Farmers follow the quality requirements
2.4	The MCC follows the quality and standards requirements
2.5	The MCC has sufficient equipment
2.6	Milk often tests acidic
2.7	Water is often found in the milk
2.8	There are trainings in milk quality and standards
2.9	Milk collectors always test milk

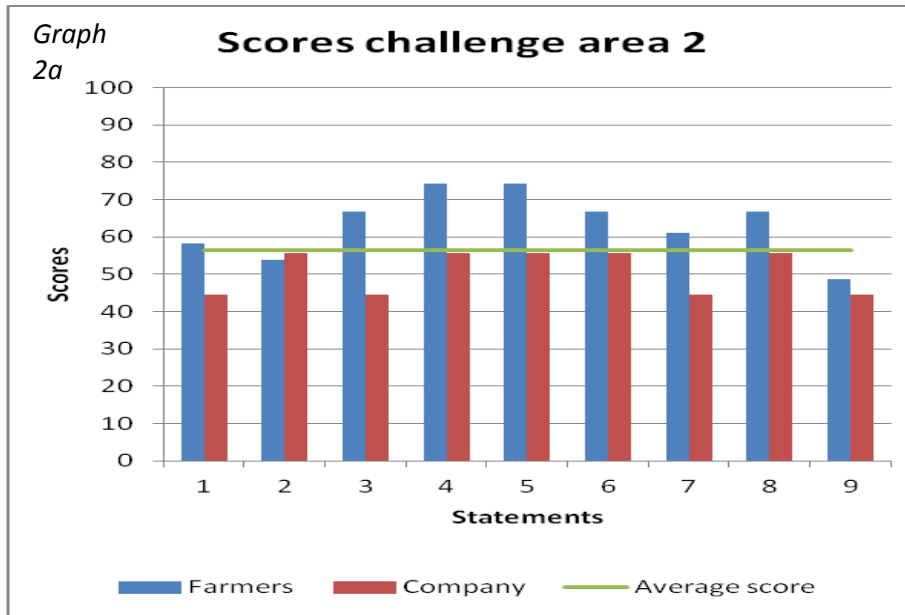


Figure 4.9.3: Scores, quality standards

In the area of 'quality and standards', it is clearly shown that the dairy is not satisfied with the milk quality. The dairy gives lower score for all statements compared to the farmers. Milking seem to be not done with the proper hygiene, farmers and the dairy seem to be saying that farmers do not know the quality standards for milk but on the hand farmers say that they do what is required to get a good quality. This could be interpreted as the lack of communications about this issue of quality and standards.

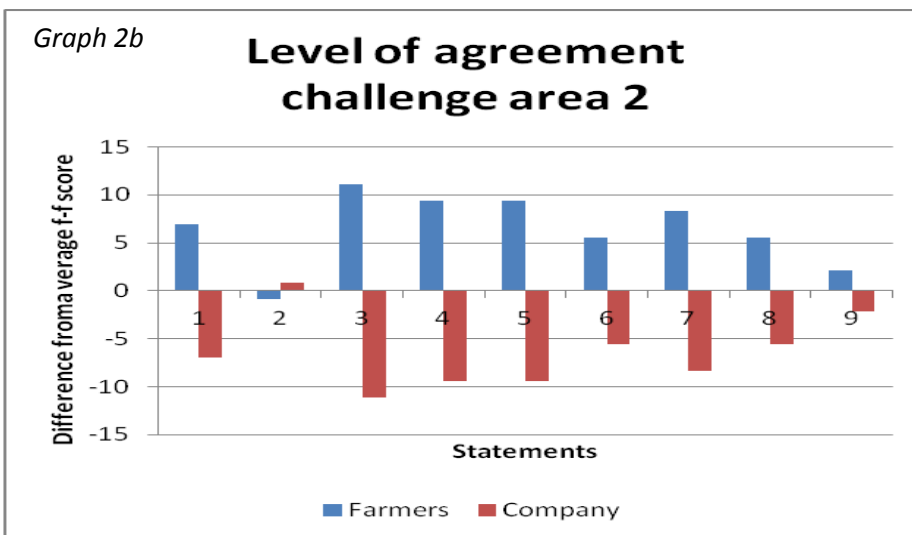


Figure 4.9.4: Level of agreement, quality and standards.

It can be observed that in this area the level of agreement is not very high.

Farmers seem believe that the quality of their milk is good while the dairy is in disagreement. There as a slight agreement about the knowledge of the quality requirements, which as it is shown in the scores figure is less than the average.

3. Challenge area (Cooperative functioning)

Table 4.9.1: Cooperative functioning

Statements challenge area “cooperative functioning”	
3.1	The cooperative is transparent
3.2	Cooperative meetings are important
3.3	The MCC searches for common interest for farmers
3.4	Milk collectors are important in milk marketing
3.5	Board members listen to farmer ideas
3.6	Cooperative finance is well managed
3.7	Farmers are aware about how the finances are managed
3.8	Farmers are happy with the cooperative functioning
3.9	Farmers know the importance of being in cooperatives

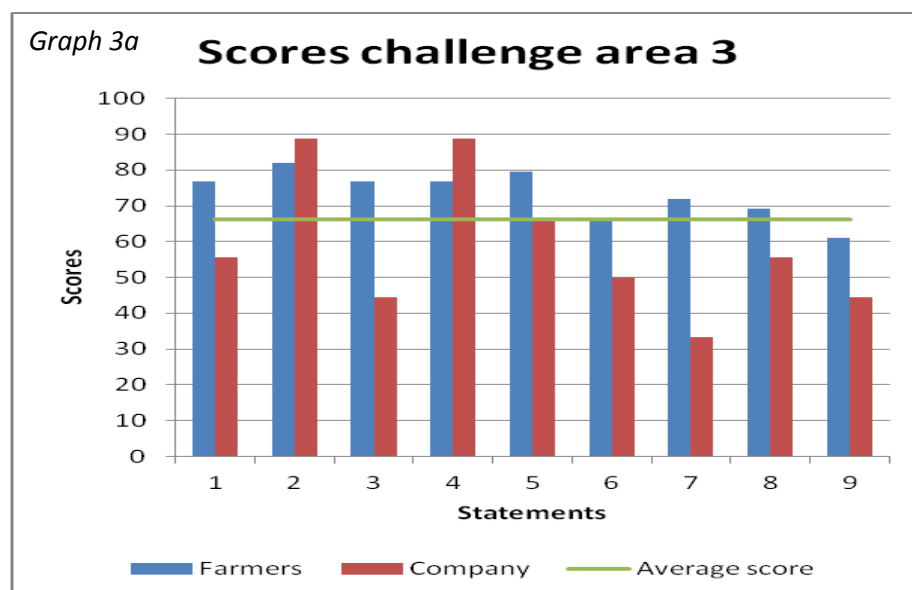


Figure 4.9.5 Cooperative functioning

The dairy seems to doubt the good governance of farmer's cooperatives (6 & 7) while farmers trust their cooperative management. The statement about transparency, good management of the cooperative assets and money, the dairy gave least scores than farmers.

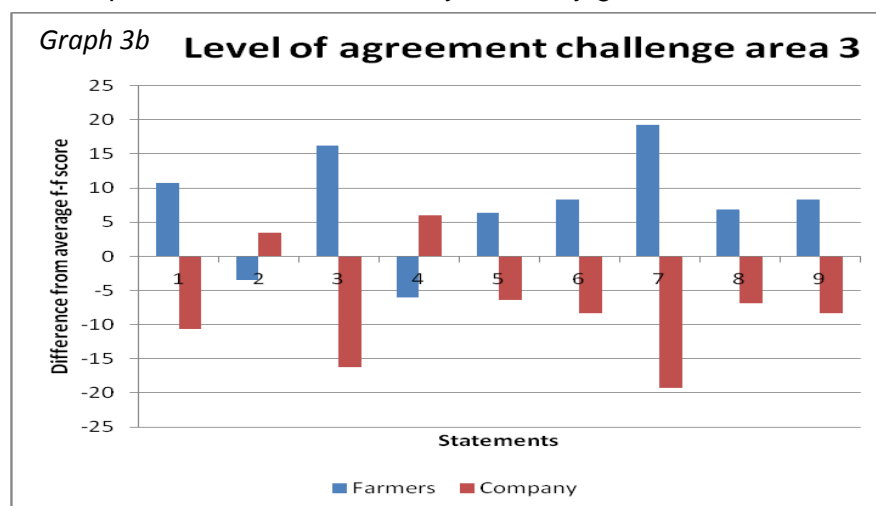


Figure 4.9.6: Level of agreement Cooperative functioning

It can be observed that in this area the level of agreement is not high. Only about statement 2 (Importance of cooperative meetings) where both are almost in agreement.

4. Challenge area (Dairy functioning)

Table 4.9.2: Statements, Dairy functioning

Statements challenge area "Dairy functioning"	
4.1	Working as a private dairy is better
4.2	The dairy has the capacity to process all the milk
4.3	The dairy has enough machines
4.4	When the dairy is not working I make losses
4.5	The dairy knows that farmers make losses when it is not working
4.6	The dairy offers other services to the farmers
4.7	The dairy benefits from milk processing
4.8	The dairy receives milk all the time
4.9	The dairy focuses more on helping farmers to get the market for their than making profits

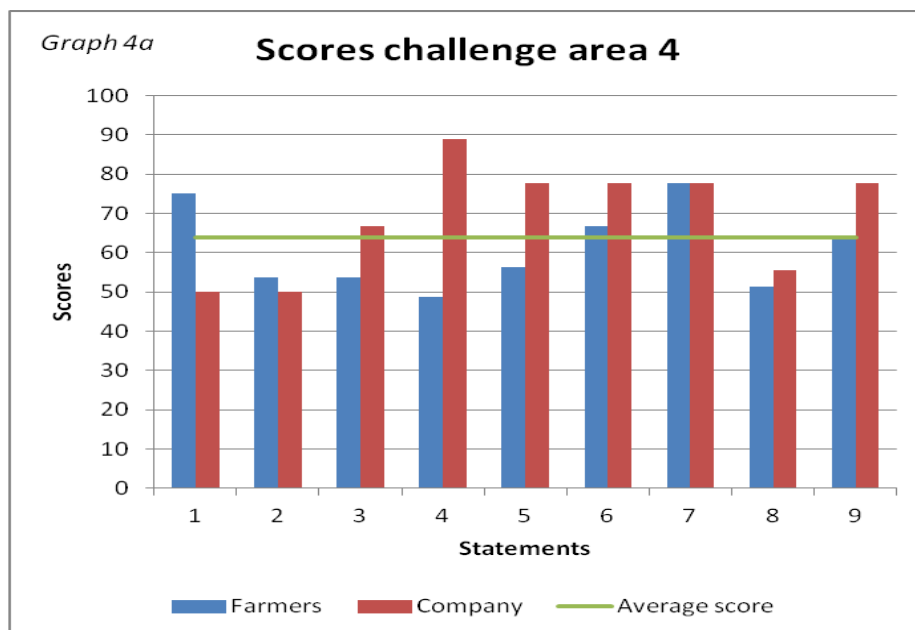


Figure 4.9.7: Scores, cooperative functioning

Farmers seem to be happy that the dairy is not fully owned by the government. In the area of losses when the dairy is not working, it clearly shows that the dairy acknowledges that farmers are the ones to lose.

On the area of what the dairy helps farmers, the score is equal.

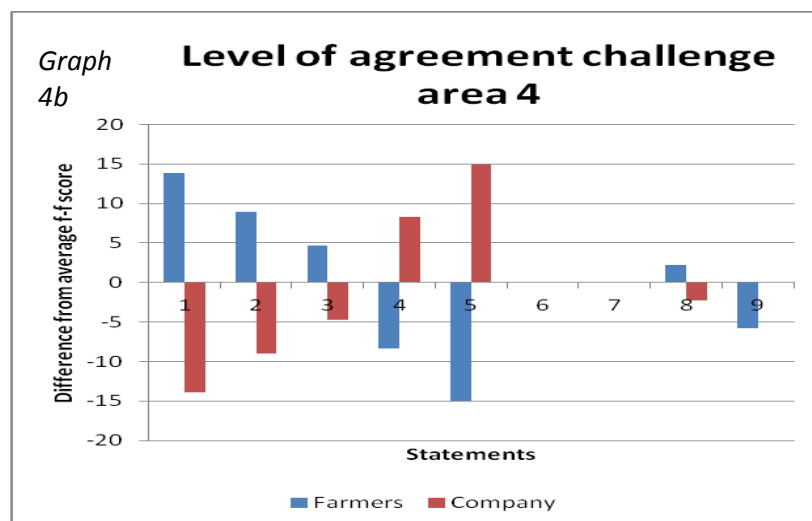


Figure 4.9.8: Level of agreement, Dairy functioning

The first observation is there is absolute agreement about the importance of the dairy to farmers and the profitability by the dairy. (Statement 6 and 7)

5. Challenge area (Prices and markets)

Table 4.9.3: Prices and markets

Statements challenge area “Prices and markets”	
5.1	Farmers have a sufficient market
5.2	The dairy has sufficient market
5.3	Prices are set based on the market
5.4	Prices are set based on the production cost
5.5	The farmer gets a fair price
5.6	Farmers are free to chose where to sell their milk
5.7	Other buyers offer a better price than the dairy
5.8	I understand how prices are set
5.9	The dairy pays on the agreed time

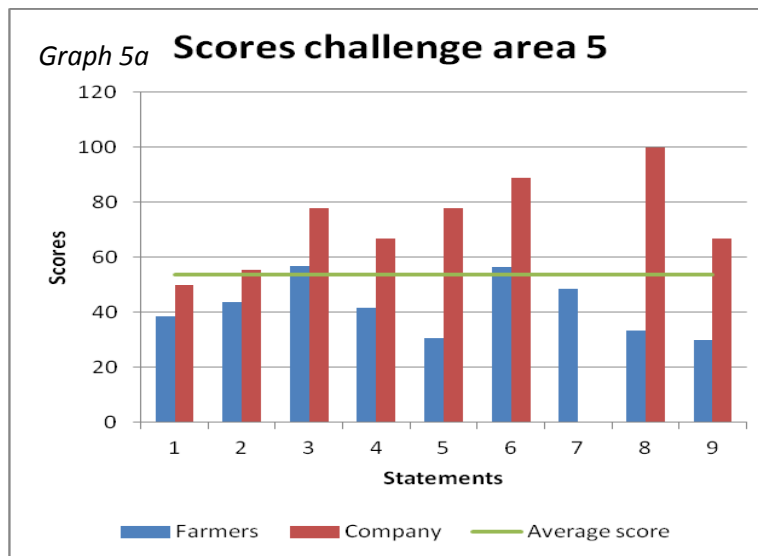


Figure 4.9.9: Prices and markets

In the area of prices and market, it is clear that the farmers are not positive about prices and market

The company gives the highest score (100) for statement 8, setting of prices, while farmers give 30.

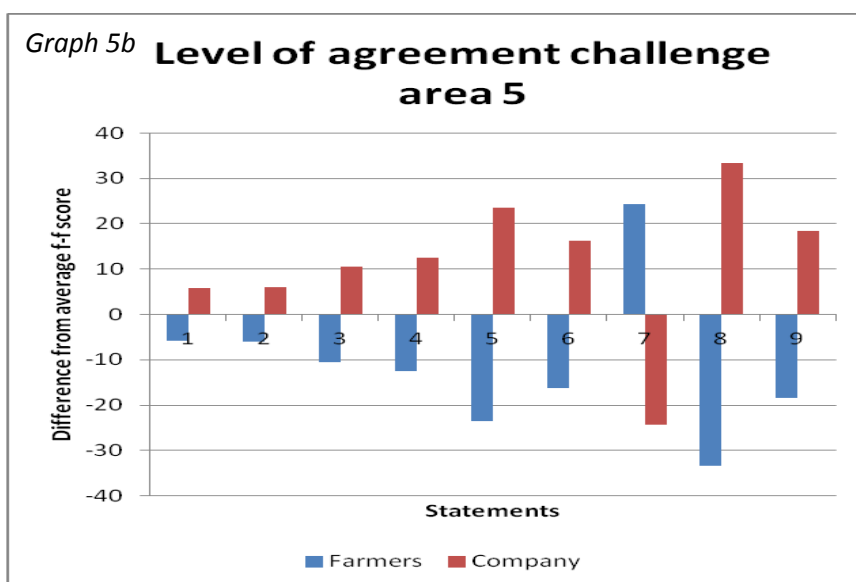


Figure 4.9.10: Level of agreement, Prices and markets

It can be observed that in this area the level of agreement is very low. Farmers give a far lower score than the Company in all the areas. About timely payments farmer do not agree with the dairy. Dairy gives a high score (66.7) while farmers score 44.4

6. Challenge area cost and benefits, Buhanda

Table 4.9.4: cost and benefits

Statements challenge area "Cost and benefits"	
6.1	Farmers are happy to sell their milk to the dairy
6.2	I benefit from milk selling
6.3	The dairy is happy to work with farmers
6.4	Milk has a great importance in food security
6.5	Money from dairy farming is important than money from other activities
6.6	Famers get profits in dairy farming
6.7	Money from milk can be invested in other projects
6.8	Farmers can get loans
6.9	One dairy (Nyanza dairy) is enough in the area

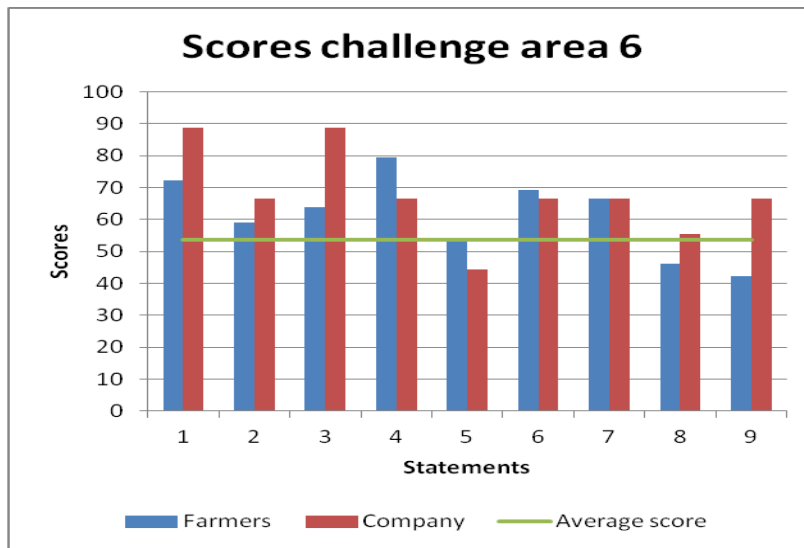


Figure 4.9.11 Scores, Cost and benefits

The dairy gave a high score about their satisfaction with farmers with regard to selling their production to the dairy. Farmers are also positive about this point. Farmers give high score to the contribution of milk to their food security.

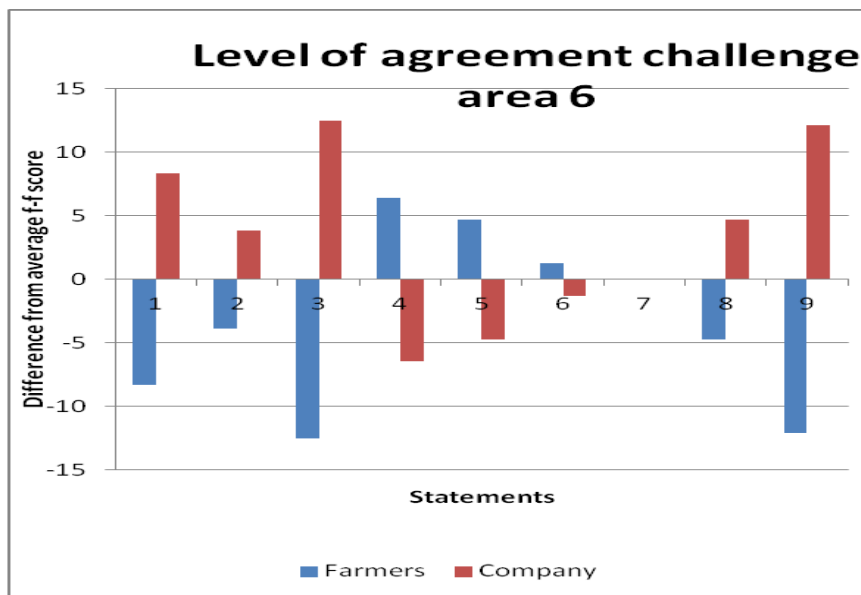


Figure 4.9.12: Level of agreement, cost and benefits

It can be observed that in this area, again farmers and the dairy are in absolute agreement about the investment of the money from milk into other projects.

7. Challenge area (Stakeholders)

Table 4.9.5: Statements, Stakeholders

Statements challenge area “Stakeholders”	
7.1	I know the stakeholders in the dairy sector
7.2	Ministry of Agriculture helps to develop dairy farming
7.3	I know the importance of the Rwanda Agriculture Board
7.4	Vets perform their role well
7.5	Microfinance institutions give loans to those who want to invest in dairy farming
7.6	I am aware of projects that promote farming
7.7	Local institutions play an important role in dairy farming
7.8	There is a good collaboration between stakeholders
7.9	I need assistance from other stakeholders

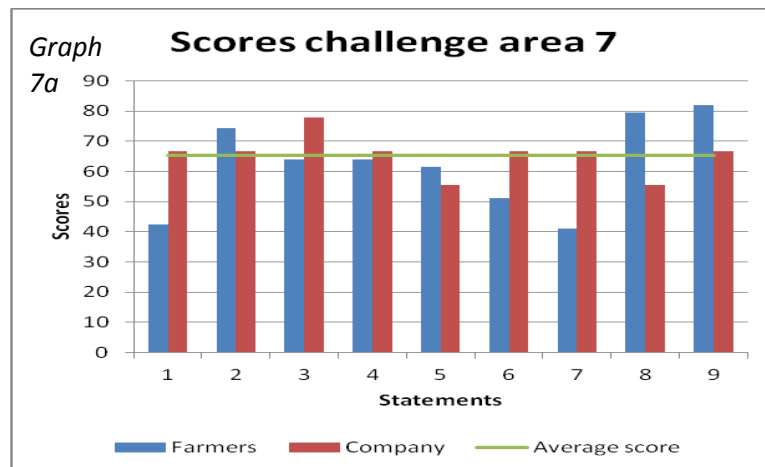


Figure 4.9.13: Scores, stakeholders

The lowest farmer's score is on the contribution of local authorities to dairy farming, and the highest is the need for assistance. The lowest score is the dairy's score which is about 5 & 8 areas.

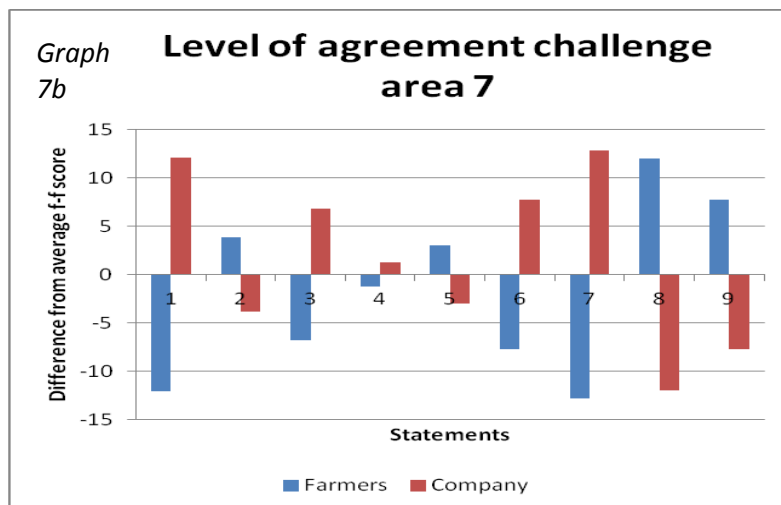


Figure 4.9.14: Level of agreement, stakeholders

A low level of agreement can be observed on the farmer's knowledge of stakeholders, where farmers score 42 and the dairy scores 66

8. Challenge area (Perspectives)

Table 4.9.6: Statements, Perspectives

Statements challenge area "Perspectives"	
8.1	Using exotic breed bulls will solve the failures in artificial insemination
8.2	Private vets would work better than Government vets
8.3	Farmers should be consulted when setting prices
8.4	Prices should be set based on the production cost
8.5	The dairy should find alternative market for milk when it is not working
8.6	There is a need for innovation and extension of the dairy
8.7	There is a need for another dairy
8.8	If the dairy sells feeds it would be affordable to the farmer
8.9	There should be trainings in dairy farming.

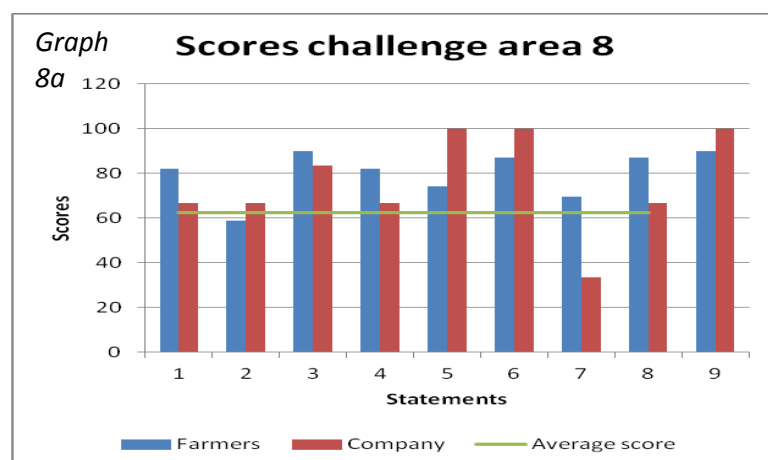


Figure 4.9.15: Scores, perspectives

In the area of perspectives, the score is above the average, for farmers apart from the area 2.(Vets working as private)

The dairy scored 100% on areas about getting a market for farmers when it is not functioning, the need for innovation and extension as well as the need for trainings on dairy farming.

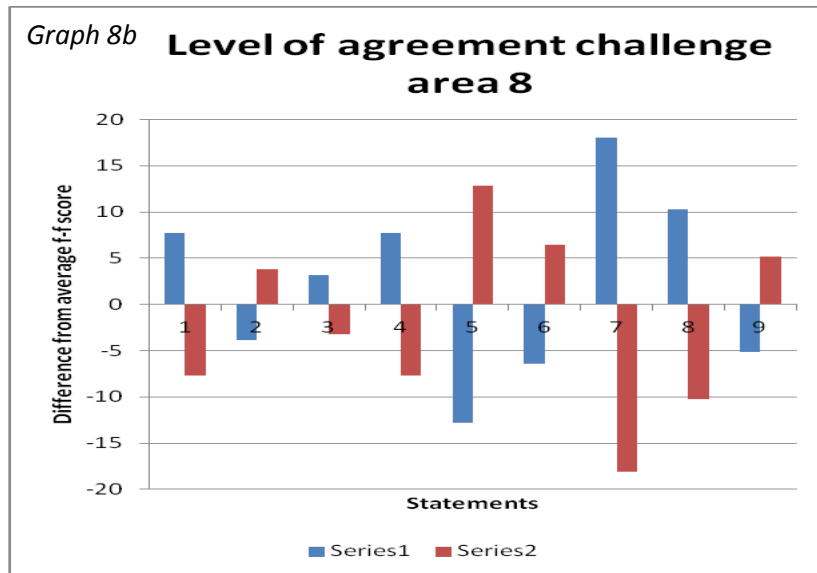


Figure 4.9.16: Level of agreement, perspectives

It can be observed that in this area the level of disagreement about the need for having another dairy is high (statement 7). Much as the farmers need it, the dairy thinks that it is not necessary.

4.10. Debriefing and focus group discussions

This section discusses the debriefing and focus group discussions. For a free exchange of ideas on challenges, the debriefing was done separately. The debriefing with Busoro farmers was done with 28 members of the cooperative, Buhanda farmers were 11 and the dairy was represented by two staff members.

It turned out that both farmers and the dairy had an absolute agreement about the knowledge of the quality and standards requirement. For farmers, there were no issues to raise but the dairy's concern was that why do farmers ignore the requirement for quality milk, yet they are well aware of it? However, the dairy recognizes that it is not their fault but blame it on the distance, transport problems and roads that are not well maintained. The dairy wished to have a milk tank hoping that this would solve this issue because in most cases, milk gets spoiled during transit.

The dairy claims to be paying farmers good and reasonable prices and many farmers are in agreement. Much as some farmers insist that some buyers offer higher prices for their milk, they prefer to sell to the dairy because getting money after a specified time helps them plan for the money better.

4.11. Haji Enterprise

This study is a case study focusing on Nyanza dairy and farmers that supply to the dairy. My decision to include Haji Enterprise in this report was dictated by the importance of Hadji Enterprise in daily activities in the area.

Haji Enterprise, is a sole proprietor business named after the owner that mainly sales fermented milk. According to the owner of the enterprise, it all started in 1997, when he was selling dry tea and donuts. “Some customer asked for milk and I started buying fermented milk from other kiosks and reselling it. Later on, I decided to ferment it myself and people appreciated my fermented milk” said Hadji. This enterprise kept growing such that today it’s in competition with Nyanza dairy that existed since 1937.

4.11.1. Milk collection and processing

Milk is collected by young men, locally referred to as ‘Abakamyi’. Their role is to move around farmers’ homes collecting milk from different farmers. Once the milk is taken to the enterprise, it is tested for the acidity water content and overall quality. The milk collector himself boils his batch in a separate container. Through this process, the enterprise is able to insure the milk quality, because, when the boiling phase fails, regardless of the first test results, the milk collector loses. After boiling, the same person store milk in a cool place to allow cooling at room temperature.

Here again the milk collector writes his name, date and time. Each batch is separately fermented and packaged, through this process, the enterprise is able to trace every batch of milk till the selling of the last drop. The packaging used to be small plastic jerry cans that were initially containers of cooking oil.



Figure 4.11.1.1: New packaging

4.11.2. Relationship with farmers

Hadji enterprise collects milk from farmers through milk collectors and most of the communications goes through them. There is one cooperative, owning a MCC that own a contract to supply to the enterprise. The MCC is Jyambere Mayaga and it is equipped with one cooler of 2000 liters.

In this research, I did not visit farmers who sell their milk to the enterprise to get their views on the relationship between them and the enterprise, but considering how much they get from selling to Hadji one may assume that they are satisfied with their relationships compared to other farmers.



Figure 4.11.2.1: Price distribution between farmers and milk collectors

Haji's Strong points

The success of Haji enterprise is based on the understanding of the market needs. Curd milk, *ikivuguto*, is the form of milk that is consumed almost by every Rwandan who consumes milk. People have been consuming such milk for centuries and are not ready to change their consumption habits in a night. The other strong point of this enterprise is the marketing strategy. All the processed milk is bought by passengers who pass and this reduces the transaction costs which would have increased the selling price. It has been almost a common practice for all passengers who pass by to stop and buy one or two jerry cans of milk from Haji enterprise which is located on the main road from Kigali to Huye.

5. ANALYSIS AND DISCUSSIONS

Chapter four discusses the outcome of the case study, the business case assessment results and the debriefing outcomes.

As shown in the case study assessment results, production is one of the main challenges for farmers and Nyanza dairy. This challenge area was averagely scored 56.8% in the case of Nyanza dairy and Gwizumukamo cooperative of Busoro. Turengeraborozi of Buhanda-Nyanza dairy the average score is 60.6%. It is true that the production has been increasing but it hasn't reached a satisfactory level for everyone.

The main issues that lead to such percentages, despite the increase in production are the unavailability of feeds and grass especially during the dry season, and cost of medicines among others. As a solution to the challenge of not having enough grass even during the dry season, Gwizumukamo cooperative has initiated a project of giving improved grass to farmers, and teaching them how to preserve it for the dry season.

Another issue that may affect the production is that farmers are only able to sell what they milk in the morning. Due to lack of facilities, it is not possible to keep the evening milk for the next day when the milk collector comes back. Therefore, because of this, almost half of the production is neither counted nor sold. It is used for family consumption but farmers revealed that it would be more beneficial if they could sell it.

With regard to expensive medicines, Busoro farmers expressed the need to have their own pharmacy. It was explained that when a farmer has to buy a small portion of medicines, the cost doubles compared to what they could pay if they purchased the whole quantity.

5.10. Cooperative functioning

Generally, farmers are happy with the functioning of their cooperatives. Busoro farmers scored 75.7% while Buhanda farmers gave 76.1% on the challenge of cooperative functioning. This is a good point because trust among cooperative members is a paramount asset. When it comes to how the dairy considers the functioning of cooperatives with 55.6% given to Busoro farmers and 53.1% given to Buhanda farmers, one may say that the dairy is skeptic about their good functioning.

5.11. Market and prices

For the farmers and even the dairy, market and price are important for the success of the business. On this issue, it is almost impossible to satisfy both sides doing business of one product. The seller would like to have the maximum possible price while the buyer would like to give the least possible price. This is also the same situation with Nyanza case. When asked about the fairness of prices, the disagreement is considerable. Busoro farmers scored 24.2% while the dairy scored 77.8%. Buhanda farmers score 30.8% and the dairy 66.7%. When the dairy staff were asked what they thought about the fact that Busoro farmers seemed a bit positive about the prices they get compared to those of Buhanda, the dairy staff argues that probably it is because of transport issues. The road from Buhanda to the dairy is in a better state compared to the one from Busoro. This makes transport a bit cheaper and a lot easier.

The main buyer of Busoro MCC milk is Nyanza dairy which takes around 67% of the total collected milk and the other part is sold to either local consumers or to Kigali. Milk is collected by milk collectors from farmers and sell it to the MCC. The MCC sells to the dairy. When the dairy is not working and the MCC has already collected milk, it looks for other alternative buyers mostly from Kigali.

Payment delays are another cause of more disagreements between farmers and the dairy. On this issue Buhanda farmers scored 33 and the dairy scored 89. The dairy says that it pays on the agreed time, plus 3-5 days of payment processing, plus 3 to 5 days at the bank and 3 to 5 days between the bank, the cooperative, the milk collector and the farmer. Some farmers seem to even be angry when you talk about this issue. Board members of Buhanda cooperative said that as the cooperative, they are thinking of ways they can get money so that they are able pay farmers in case the dairy delays to pay. "Even now, when a farmer urgently needs money, I cannot say no. I lend him some and subtract it when the dairy pays us" said the cooperative president.

Despite this issue, all farmers are still interested in selling their milk to the dairy. They explained that it is because; when they get paid the money can be invested in other activities which would otherwise not be possible when they sell one or two litres and get paid immediately

Milk Chain in Nyanza District

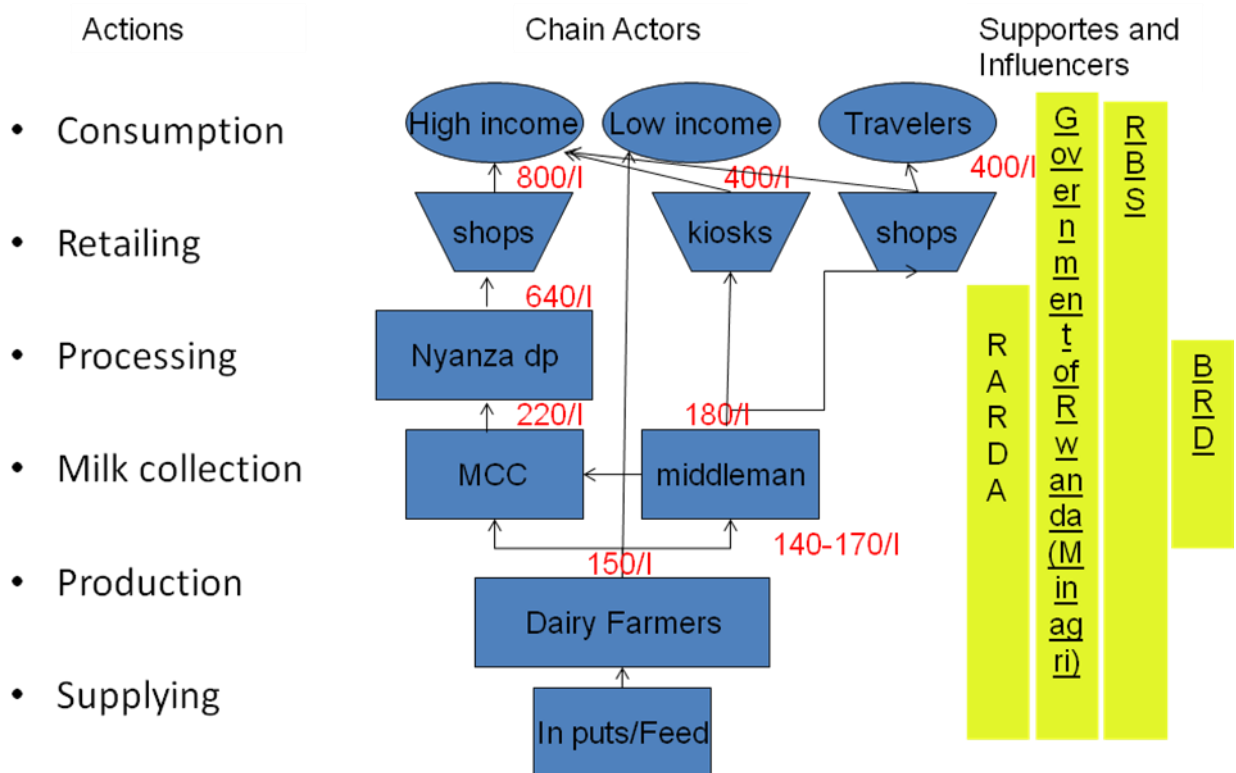


Figure 5.11.1: Milk chain in Nyanza

5.12. Contracts

Written contracts are only between the MCC and milk collectors. Others are supply agreements between the dairy and cooperatives. Asked whether contracts are important or not in dairy business, farmers said yes to 66.6 % but the dairy scored 77.8. The dairy said that they don't see any problem in having supply contracts but currently it was not possible because the dairy have technical problems sometimes.

5.13. Quality and standards

The total average for quality and standards was 65.8% for Busoro-Nyanza scoring and 55% for Buhanda-Nyanza scoring. With regard to the knowledge of requirements in milk quality and standards, both farmers and the dairy say that they know what is necessary. Farmers also believe to be doing all their best to supply good quality milk (84.8%), while the dairy does not agree with the quality. The dairy scored 44.4% to both Buhanda and Busoro farmers. When asked why and yet the dairy keeps receiving milk, they explained that, with the current quality standards, there is some processing that cannot be done. "You cannot make UHT milk with such quality" said one of the dairy staff.

5.14. Cost and profits

A farmer gets from 120 to 150 Rwf per litre of fresh milk. In Rwanda, it is not a habit and an easy task for farmers to calculate how much they invest in agriculture activities. They don't even calculate what they get. When asked if they at least record all the milk (sold and consumed) they all said: "Ntawe ubara ibyo aya" loosely translated to mean that one cannot count what he/she consumes. But even though they keep milk cows, they all say that dairy farming is not profitable considering the time and energy they invest in and compared to other agricultural activities. On the other side, all other people involved in the dairy get profits from it. A milk collector sales one litre 150-180 Rwf, the MCC gets 230 from the dairy and the dairy sales a litre at 640 Rwf.

5.15. Comparison between Gwizumukamo and Turengeraborozi cooperatives vis-a-vis Nyanza dairy

In this section, I will try to compare some views of *Busoro* farmers, *Gwizumukamo* cooperative and *Buhanda* farmers, *Turengeraborozi* cooperative towards Nyanza dairy. Due to the fact the questionnaires are different, the comparison is only accurate to the tune of approximately around 80% and I will only compare the overall relationship and some common statements.

Table 5.15.1: Overall scores Buhanda

5. Overall results Buhanda farmers	Average scores per challenge area								Average all areas
Challenge areas	1	2	3	4	5	6	7	8	
Farmers' scores	45.3	59.1	76.1	57.2	43.0	61.6	64.1	79	60.7
Company scores	32.1	51.9	53.1	70.7	58.0	72.1	76.5	69	60.4
Average firm-farm per challenge area	38.7	55.5	64.6	63.9	50.5	66.8	70.3	74	60.6
Average overall score (all challenge areas)	60.6	60.6	60.6	60.6	60.6	60.6	60.6	61	
Difference farmers - average F-F score	6.6	3.6	11.5	-6.8	-7.5	-5.2	-6.2	5	0.1
Difference Company - average F-F score	-6.6	-3.6	-11.5	6.8	7.5	5.2	6.2	-5	-0.1

Table 5.15.2: Overall results Busoro

Overall results Busoro	Average scores per challenge area							Average all areas
Challenge areas	1	2	3	4	5	6	7	
Farmers' scores	47.5	75.7	48.5	37.9	67.5	60.6	37.4	53.6
Company scores	30.9	55.6	55.6	67.9	64.2	66.7	81.5	60.3
Average firm-farm per challenge area	39.2	65.6	52.0	52.9	65.8	63.6	59.4	56.9
Average overall score (all challenge areas)	56.9	56.9	56.9	56.9	56.9	56.9	56.9	
Difference farmers - average F-F score	8.3	10.1	-3.5	-15.0	1.6	-3.0	-22.0	-3.4
Difference Company - average F-F score	-8.3	-10.1	3.5	15.0	-1.6	3.0	22.0	3.4

Table 5.15.3: Challenge areas for both Buhanda and Busoro

S / N	Place Buhanda	S / N	Place Busoro
1	Production	1	Production
2	Quality and standards	2	Cooperative functioning
3	Cooperative functioning	3	Market and prices
4	Dairy functioning	4	Contract
5	Price and markets	5	Quality and standards
6	Cost and profits	6	Cost and profits
7	Stakeholders	7	Stakeholders
8	Perspectives		



Figure 5.15.1: : Nyanza dairy and Busoro/Buhanda overall relationship

From the tables above, we can see that the overall average score for Buhanda-Nyanza dairy was 60.6% while for the Busoro-Nyanza dairy it was 56.9%. This shows that the dairy relationship with Buhanda farmers is a bit better than the one with Busoro farmers. On farmer's side, Buhanda farmers scored the dairy at 60.7 while Busoro farmers scored to 53.6 to the dairy. The dairy on the other side scored Buhanda farmers 60.4 and 60.3 to Busoro farmers. The dairy's scores to both cooperatives shows that Nyanza dairy treats and considers them equally yet both cooperatives have different opinions towards the dairy. When asked what they think about this difference, one of the dairy staff explained that "May be it is because the road from Buhanda is better than the one from Busoro which makes transport here a bit difficult" said one of the dairy staff. Another possible reason according to my observations is that Busoro farmers seem to be much more demanding compared to Buhanda farmers.

6. DAIRY FARMING AND FOOD SECURITY

A study by (Wurzinger, et al., 2006) has found that in Rwanda only 17% of the herds are owned exclusively by the household head where herds are owned by household members in conjunction with the head. During this study, all respondents declared to have equal access to resources from milk. A certain lady we spoke to had this to say: "Some years back, cattle used to belong to men but in our days, we all have the same rights. Some of us even have our own cows that we have received from either cooperatives or a project while some men don't have even one" This is a good indicator to food access by every member of the family as in most cases, women are the ones to cater for food in all households in Rwanda. However, the fact that Rwanda is highly populated, dairy farming may conflict with crop production and the land used for crops is also used for grass cultivation.

In Rwanda the importance of milk in human nutrition has been recognized for ages. Farmers consider milk as one of the best nutritious foods for every one regardless of the age but mostly for children. During our field visit, one of the farmers told us that one of his children was suffering from *ubworo*³ because he was not getting enough milk production due to the dry season and lack of feeds. In (Haug A, Hostmark AT, Harstad OM, 2007) it is said consumption of 0.5 litre milk daily supplies a significant amount of many of the nutrients that are required daily in our bodies.

As stated by Walshe et al (1991) as cited in Staal (1996) increased domestic dairy production by smallholders has the potential in much of Africa to generate income and employment on a wide scale, and thus to improve the welfare of populations on an economically sustainable basis. Farmers in the studied business case, consider milk selling as one of their best income generating activity. A farmer with one cow gets around 10,000 Rwandan francs per month during the dry season, while some said they get around 45,000 Rwandan francs during the rain season. Dairy production provides a unique development strategy as a source of livelihood for most smallholder farmers not only providing income through milk sales but also, milk for home consumption.(Lukuyu, 2009).b To this we can add production of manure which is very important to the mostly sloppy lands of Rwanda. The Government of Rwanda has also understood that in a country where agriculture itself is not sufficient, dairy farming may be a supplement to income generation. Farmers who also sell through cooperatives

³ Ubworo is a Kinyarwanda term used to characterise someone who suffers from malnutrition due to lack of dairy products consumption

7. CONCLUSION AND RECOMMENDATIONS

7.10. Conclusion

The aim of this research was to assess the relationship between farmers and Nyanza dairy. This study was also an experimentation of the 2-2 Tango research tool for further development and publication of the tool. The research was done between Farmers of Gwizumukamo cooperative located in Busoro Sector, Nyanza district, farmers of Turengeraborozi located in Kirengere sector, Ruhango district. This research helped both farmers and the dairy to know what the other side think about their working relationship.

This study showed that there are numerous challenges either for the dairy or farmers and some shared challenges. One of the main challenges is the old facilities and also the difficulty in getting good quality milk. The dairy has been in operation since 1937 and currently needs a total innovation and expansion. The lack of local spare parts and technicians to repair and service the machines at the dairy has resulted into occasional inactivity that sometimes goes up to two weeks. This leads to losses both on the side of the dairy and farmers, farmers being the big losers as they don't have an alternative market for their milk. Farmers also have their own challenges. Among the challenges that the study showed are late payments from the dairy, low prices offered to their milk, expensive medicines and feeds, not forgetting difficulties in accessing artificial inseminations on time.

On the overall average score, the agreement level, was 56.8 for Nyanza Dairy-Busoro farmers and 57.1 for Nyanza Dairy-Buhanda farmers. What would be the best agreement level between farmers and food processors working in the same value chain? What could be done to improve and maintain a good relationship? When the dairy is not working, should it only inform farmers that it cannot receive milk?

The 2-2 tango tool proved to be a good research tool for the assessment of firm-farmer relationships, as it assesses their views on same challenges. However, some difficulties were encountered such as, inability to get many farmers for the scoring exercise, difficulties in formulating statements that could be easily answered by both farmers and the dairy.

It is good to modernize the dairy processing, mostly if you are targeting the export market but the success of Hadji enterprise, which only specialized in fermented milk proved that the first priority should be to satisfy the local market.

7.11. Recommendations

Working towards a good relationship between Nyanza dairy and farmers is recommended as they both need each other for a successful dairy business.

- This report should be used by both farmers and the dairy as a starting point for improvement of business relations.

- Nyanza dairy should train farmers in entrepreneurial farming, bearing in mind that this would increase, trust and performance. There is a need for farmers to measure profitability of agriculture activities and only invest their time and money in those that are commercially profitable.
- The Agri-profocus Rwanda, should keep working on sensitizing famers and companies on the necessity of having good relationships as a tremendous asset for business success.
- The CDI should start applying the 2-2 Tango as a research tool in agribusiness as it proved to be a fabulous research tool.
- The success of Haji enterprise should give a lesson to all stake holders who invest time and money and time in promoting dairy farming.

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Appendix A: Questionnaire (Busoro)

Statements		Scores			
		0	1	2	3
		<i>I totally disagree</i>	<i>I disagree</i>	<i>I agree</i>	<i>I totally agree</i>
		☹☹	☹	☺	☺☺
1 Statements challenge area “Production”					
1.1	Farmers have high milking cows				
1.2	Farmers have enough knowledge in high milk production				
1.3	Milk production is increasing				
1.4	Farmers have enough feed				
1.5	Land to cultivate the grass is enough				
1.6	High milk production feeds (Concentrates) are affordable				
1.7	Medicines are affordable				
1.8	The farmer is able to calculate the cost of one litre of milk				
1.9	Farmers are trained in dairy farming				
2 Statements challenge area “Cooperative functioning”					
2.1	The MCC treats all farmers equally				
2.2	The MCC is important in the dairy marketing				
2.3	The MCC represents farmer's interests				
2.4	Milk collectors are important in dairy marketing				

25	Farmer's representatives work for farmers interests				
26	Milk collectors do their job correctly				
27	Farmers are happy with the cooperative functioning				
28	Farmers know how the cooperative finances are managed				
29	Farmers understand the importance of being in cooperatives				
3 Statements challenge area "Market and prices"					
3.1	There is enough market for milk				
3.2	Famers know requirements on milk quality				
3.3	Farmers decide where to sell their milk				
3.4	The farmer gets a fair price				
3.5	The dairy accepts all the collected milk				
3.6	Other buyers give a higher price than the dairy				
3.7	The dairy accepts milk all the time				
3.8	The dairy pays on time				
3.9	The farmer benefits from price changes				
4 Statements challenge area "contract and agreements"					
4.1	Contracts and agreements are important in milk market				
4.2	Farmers understand the content of contracts				
4.3	Farmers can negotiate contracts with the dairy				
4.4	Farmers are consulted in contracts preparations				

4.5	The cooperative respects the contract and agreements				
4.6	The dairy respects contracts and agreement				
4.7	Milk collectors respects the contract				
4.8	Contracts are clear about dispute settlements				
4.9	Farmers are allowed to sell to other buyers.				
Statements challenge area “Quality and (B standards”					
5.1	Farmers follow requirements to have good quality milk				
5.2	I know the good quality of milk				
5.3	Milk collectors test milk all the time				
5.4	The MCC follows quality and standards requirements				
5.5	The MCC has sufficient equipments				
5.6	The MCC keep records of the production				
5.7	Farmers keep records of their milk production				
5.8	Farmers trust measurements of milk collectors				
5.9	Our milk is better than milk from others				
Statements challenge area “Cost and 6 benefits”					
6.1	Farmers are happy to sell their milk production to the dairy				
6.2	I benefit from dairy business				
6.3	The dairy is satisfied of the collaboration with farmers				

6.4	The dairy gets profits in milk selling				
6.5	Farmers target profits in milk selling				
6.6	The MCC gets profits in milk selling				
6.7	Money from milk is more important than money from other agricultural products				
6.8	Famers can get loans based on dairy farming				
6.9	One dairy plant is enough in Nyanza production area				
Stakeholders					
7.1	I know who are stakeholders in dairy sector				
7.2	I know what every stakeholder can help to achieve				
7.3	Girinka project contributed to the development of dairy faming				
7.4	Vets help in dairy farming				
7.5	Finance institutions give loans to those who want to invest in farming				
7.6	The government contribution is seen				
7.7	The government puts more efforts in production increase than market issues				
7.8	There is a good collaboration between stakeholders in dairy farming				
7.9	I need any assistance from other stakeholders				

Appendix B: Average scores per challenge area, Busoro

Overall results	Average scores per challenge area							Average all areas
Challenge areas	1	2	3	4	5	6	7	
Farmers' scores	47.5	75.7	48.5	37.9	67.5	60.6	37.4	53.6
Company scores	30.9	55.6	53.1	67.9	64.2	66.7	81.5	60.0
Average firm-farm per challenge area	39.2	65.6	50.8	52.9	65.8	63.6	59.4	56.8
Average overall score (all challenge areas)	56.8	56.8	56.8	56.8	56.8	56.8	56.8	
Difference farmers - average F-F score	8.3	10.1	-2.3	-15.0	1.6	-3.0	-22.0	-3.2
Difference Company - average F-F score	-8.3	-10.1	2.3	15.0	-1.6	3.0	22.0	3.2

Appendix C: Questionnaire Buhanda

Statements		Scores			
		0	1	2	3
		<i>I totally disagree</i>	<i>I disagree</i>	<i>I agree</i>	<i>I totally agree</i>
		☹☹	☹	☺	☺☺
Statements challenge area “Production”					
1.1	Farmers have high milk yielding cows				
1.2	Farmer gets artificial insemination easily				
1.3	The artificial insemination succeeds immediately				
1.4	Production per cow is increasing				

1.5	Farmers have enough silage				
1.6	There is enough land for grass cultivation				
1.7	Farmers are happy with the zero grazing policy				
1.8	Feeds are affordable				
1.9	Medicines are affordable				
Statements challenge area “Quality and standards”					
2.1	Milking is hygienically done				
2.2	Farmers know the required quality and standards of milk				
2.3	Farmers follow the quality requirements				
2.4	The MCC follows the quality and standards requirements				
2.5	The MCC has sufficient equipment				
2.6	Milk often test acidic				
2.7	Water is often found in milk				
2.8	There are trainings in milk quality and standards				
2.9	Milk collectors always test milk				
Statements challenge area “cooperative functioning”					
3.1	The cooperative is transparent				
3.2	Cooperative meetings are important				
3.3	The MCC searches for common interest for farmers				
3.4	Milk collectors are important in milk marketing				
3.5	Board members listen to farmer ideas				
3.6	Cooperative finance is well managed				
3.7	Farmers know how the finance is managed				

3.8	Farmers are happy with the cooperative functioning				
3.9	Farmers know the importance of being in cooperatives				
Statements challenge area “Dairy functioning”					
4.1	Working as a private dairy is better				
4.2	The dairy has the capacity to process all the milk				
4.3	The dairy has enough machines				
4.4	When the dairy is not working I have a loss				
4.5	The dairy knows that farmers lose when it is not working				
4.6	The dairy offers other services to the farmers				
4.7	The dairy benefits from milk processing				
4.8	The dairy receives milk all the time				
4.9	The dairy focuses more on helping farmers to get the market than making profits				
Statements challenge area “Prices and markets”					
5.1	Farmers have a sufficient market				
5.2	The dairy has sufficient market				
5.3	Prices are set based on the market				
5.4	Prices are set based on the production cost				
5.5	The farmer gets a fair price				
5.6	Farmers free chose where to sell their milk				
5.7	Other buyers offer a better price than the dairy				
5.8	I understand how prices are set				
5.9	The dairy pays on agreed time				
Statements challenge area “Cost and benefits”					

6.1	Farmers are happy to sell their milk to the dairy				
6.2	I benefit from milk selling				
6.3	The dairy is happy to work with farmers				
6.4	Milk has a great importance in food security				
6.5	Money from dairy farming is important than money from other activities				
6.6	Famers get profits in dairy farming				
6.7	Money from milk can be invested in other projects				
6.8	Farmers can get loans				
6.9	One dairy (Nyanza dairy) is enough in the area				
Statements challenge area “Stakeholders”					
7.1	I know stakeholders in the dairy sector				
7.2	Ministry of agriculture helps to develop dairy farming				
7.3	I know the importance of the Rwanda Agriculture Board				
7.4	Vets do their job well				
7.5	Microfinance institutions give loans to those who want to invest in dairy farming				
7.6	I know projects that promote farming				
7.7	Local institutions assist in dairy farming				
7.8	There a good collaboration between stakeholders				
7.9	I need assistance from other stakeholders				
Statements challenge area “Perspectives”					
8.1	Using exotic breed bulls will solve the failures in artificial insemination				
8.2	Private vets would work better than government ones				
8.3	Farmers should be consulted to set prices				

8.4	Prices should be set based on the production cost				
8.5	The dairy should find the market for milk when it is not working				
8.6	There is a need for innovation and extension of the dairy				
8.7	There is a need for another dairy				
8.8	If the dairy sells feeds it would be affordable to the farmer				
8.9	There should be trainings in dairy farming.				

Appendix B: Average scores per challenge area, Busoro

Overall results	Average scores per challenge area							Average all areas
Challenge areas	1	2	3	4	5	6	7	
Farmers' scores	47.5	75.7	48.5	37.9	67.5	60.6	37.4	53.6
Company scores	30.9	55.6	53.1	67.9	64.2	66.7	81.5	60.0
Average firm-farm per challenge area	39.2	65.6	50.8	52.9	65.8	63.6	59.4	56.8
Average overall score (all challenge areas)	56.8	56.8	56.8	56.8	56.8	56.8	56.8	
Difference farmers - average F-F score	8.3	10.1	-2.3	15.0	1.6	-3.0	22.0	-3.2
Difference Company - average F-F score	-8.3	-10.1	2.3	15.0	-1.6	3.0	22.0	3.2

Appendix D: Overall results, Buhanda

Challenge area 8	Average scores per statement									Average area score
Statements	1	2	3	4	5	6	7	8	9	
Farmers' scores	82.1	59.0	89.7	82.1	74.4	87.2	69.4	87.2	89.7	60.3
Company scores	66.7	66.7	83.3	66.7	100.0	100.0	33.3	66.7	100.0	64.2
Average firm-farmer statement score	74.4	62.8	86.5	74.4	87.2	93.6	51.4	76.9	94.9	62.3
Average firm-farmer area score	62.3	62.3	62.3	62.3	62.3	62.3	62.3	62.3	62.3	62.3
Difference farmers - average F-F score	7.7	-3.8	3.2	7.7	-12.8	-6.4	18.1	10.3	-5.1	-1.9
Difference Company - average F-F score	-7.7	3.8	-3.2	-7.7	12.8	6.4	-18.1	23.1	5.1	1.9